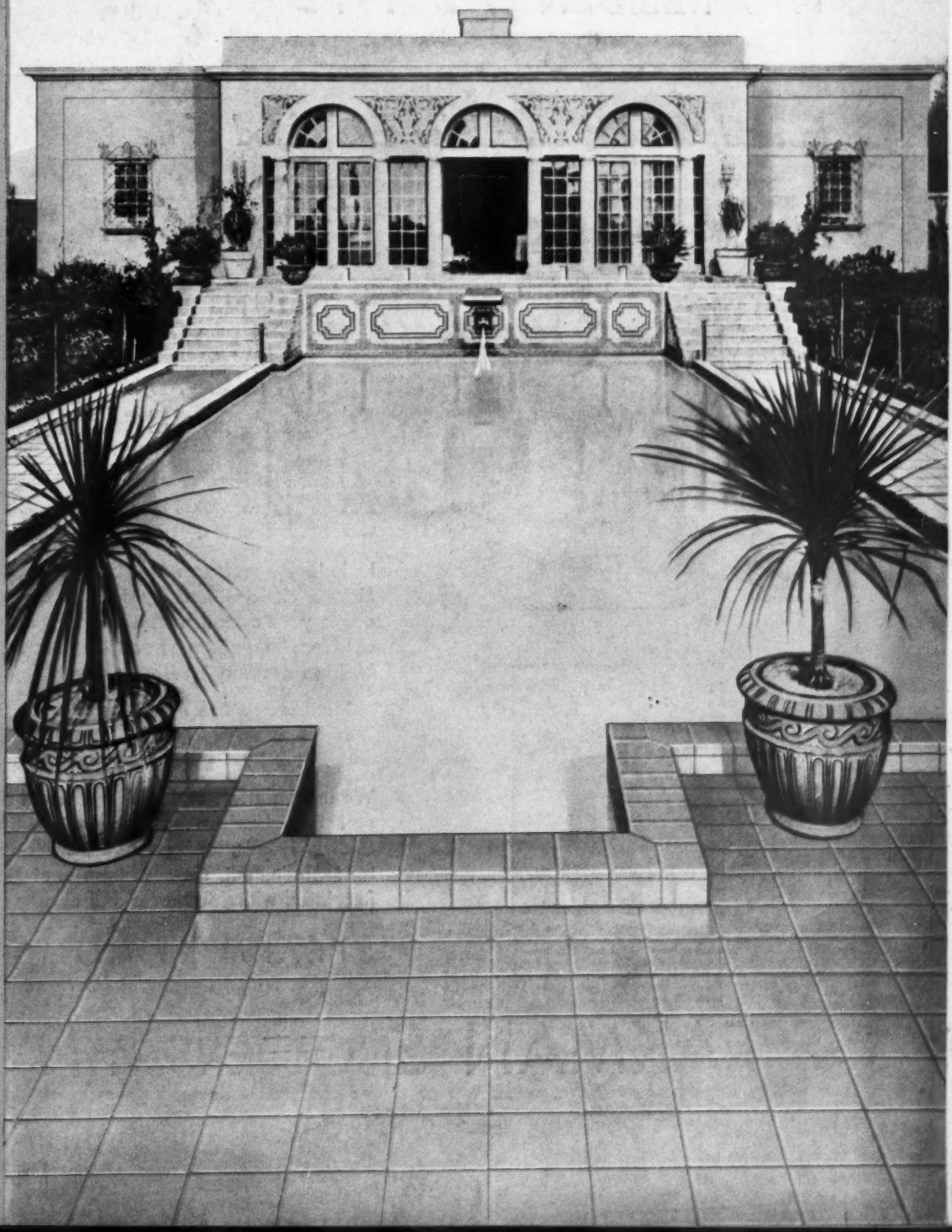
D66
N160
AUG. 15
LIBRARY

DOMESTIC ENGINEERING

PLUMBING & HEATING CONTRACTING AND MERCHANDISING



ew Home Loan
ank Law will help
uilding industry--
y C. M. Woolley

his Southern Cali-
rnia pool typifies
ork which piping
ontractors find in-
resting and profit-
able

AUTOMATIC HEAT
PAGE 95

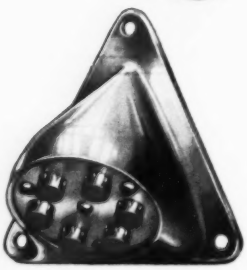
AUGUST, 1932

SPEAKMAN ANYSTREAM SELF-CLEANING SHOWER HEADS ARE NOT LIMITED TO THE RESIDENTIAL TYPE

K-3395—SPEAKMAN Anystream Self-Cleaning Shower Head (Pat. Jan. 2, 1923 and Nov. 3, 1931)

Instead, there is a head for every kind of installation, including

K-3396—SPEAKMAN Anystream Self-CleaningShowerHead with 1/2 inch I. P. female inlet and lock-shield arranged to operate by a key.



K-3399—SPEAKMAN Anystream Self-Cleaning Wall Type Shower Head with 1/2 inch I. P. female inlet in center of back and arranged to operate by a 5/16 inch hexagon wrench.

K-3416—SPEAKMAN Anystream Self-Cleaning Unit Control Triple-Cluster Shower Head with 1 inch I. P. female inlet (patented). For use where a large amount of water is desired. Because of the large size of the head it should be braced to the ceiling.

HOSPITALS . . .
SCHOOLS . . . .
GOLF CLUBS . . .
COUNTRY CLUBS .
GYMNASIUMS . .
PUBLIC AND . . .
SEMI-PUBLIC PLACES

ALL of these are shown in a 16-page bulletin, K-57, which will be sent to plumbers and wholesale dealers.

Include a Speakman Anystream Self-Cleaning Shower Head with every shower you sell. Point out to your customers the advantages of being able to take a normal, flood, and even a needle bath on ordinary house pressures.

There are no holes to stop up in this head and it can be flushed of pipe scale and sediment by simply turning the lever handle.

We have blotters and folders that will help you sell Speakman Anystream Self-Cleaning Shower Heads, both on new installations and for replacement. These will be sent promptly, imprinted with your name and address.

SPEAKMAN COMPANY
WILMINGTON, DELAWARE

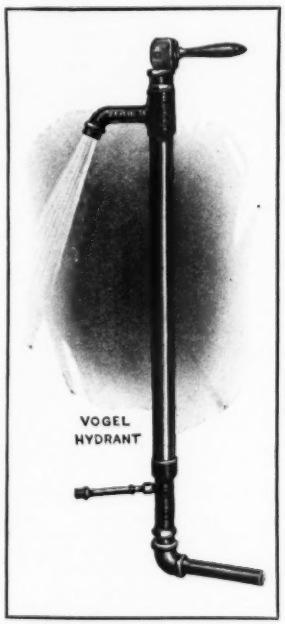
SPEAKMAN *SHOWERS & FIXTURES*

HERE'S WHAT CONSTITUTES A PROFITABLE JOB!

A SATISFIED CUSTOMER

A GOOD-LOOKING, ECONOMICAL INSTALLATION

REPEAT ORDERS FOR THE PLUMBER



VOGEL FROST-PROOF HYDRANT

Insures a supply of water outside the home winter and summer—garages and residences with large lawns are also good prospects.

VOGEL installations have these three things necessary for a profitable job. When you install Vogel frost-proof closets or hydrants you are sure of having a satisfied customer, because a Vogel closet or hydrant can never freeze even in the coldest weather. It's sure to be economical for your customer because a Vogel outfit will last for years and years without the need for repairs. And a Vogel installation means repeat business — for satisfied customers tell others.

JOSEPH A. VOGEL COMPANY

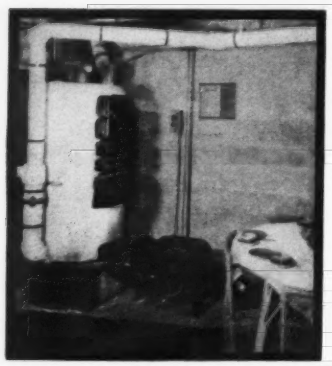
Wilmington, Delaware
St. Louis, Missouri

NUMBER ONE VOGEL FROST-PROOF CLOSET

Simple in operation. Sturdy in construction. Half a million in operation.

Folders and blotters on Vogel products imprinted with your name and address will be sent promptly upon request.

VOGEL PATENTED *frost-proof* Products



DOMESTIC ENGINEERING

Plumbing & Heating Contracting & Merchandising

Established 1889

Vol. 140, No. 3 August, 1932 Whole No. 1973

Published Monthly by
Engineering Publications, Inc.
1900 Prairie Avenue, Chicago

F. P. KEENEY,
President and Treasurer

E. DE FOREST WINSLOW
Vice President

O. T. CARSON
Secretary

EDITORIAL STAFF
R. V. Sawhill, *Editor*
R. Herlov, Chas. E. Price,
L. W. Britton,
W. W. Gothard,
Associate Editors
R. M. Starbuck, Jr.,
Consulting Editor on Plumbing

ADVERTISING REPRESENTATIVES
E. G. Hutchison,
R. Payne Wettstein,
Wallace J. Osborn, H. J. Carr,
D. M. Kenney, Robert A. Jack,
A. T. Papineau, I. W. Hoff

BRANCH OFFICES
NEW YORK—
Rooms 1706-1707, 110 East 42nd St.
PITTSBURGH—
Room 604, Chamber of Commerce Bldg.

TERMS OF SUBSCRIPTION
Anywhere in the World, except Canada, $2.00 per year. Canada $3.00 per year
Current copies, 25c each
Back numbers, 50c each

Entered as Second Class Matter on January 19, 1929, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright 1932, by Engineering Publications, Inc.

Member of Audit Bureau of Circulations

IN THIS ISSUE

Page

The Federal Home Loan Bank System. By Clarence M. Woolley 36
How Swimming Pool Was Built on Shore of Lake. By Thomas R. Shaver 38
What Air Conditioning Includes 42
Ice—Design, Installation and Operation of Home Cooling Job. By G. B. Helmrich 43
A New Market for the Piping Contractor 47
Remodeling Continues to be Contractors' Best Opportunity . . 48
Trouble Shooting in the Small Heating Plant. By Carl J. Klermund 54
Bear Hunt in Alaska Provides Thrilling Experiences 56
Master Plumbers Discuss Direct Purchasing from Manufacturers 58
Reduce Your Prospects to Increase Your Sales 60
How a Big Plumbing Installation Was Planned. By James A. Cotter 64
Items for Store, Shop and Job 76
Convention of American Society of Sanitary Engineering 91

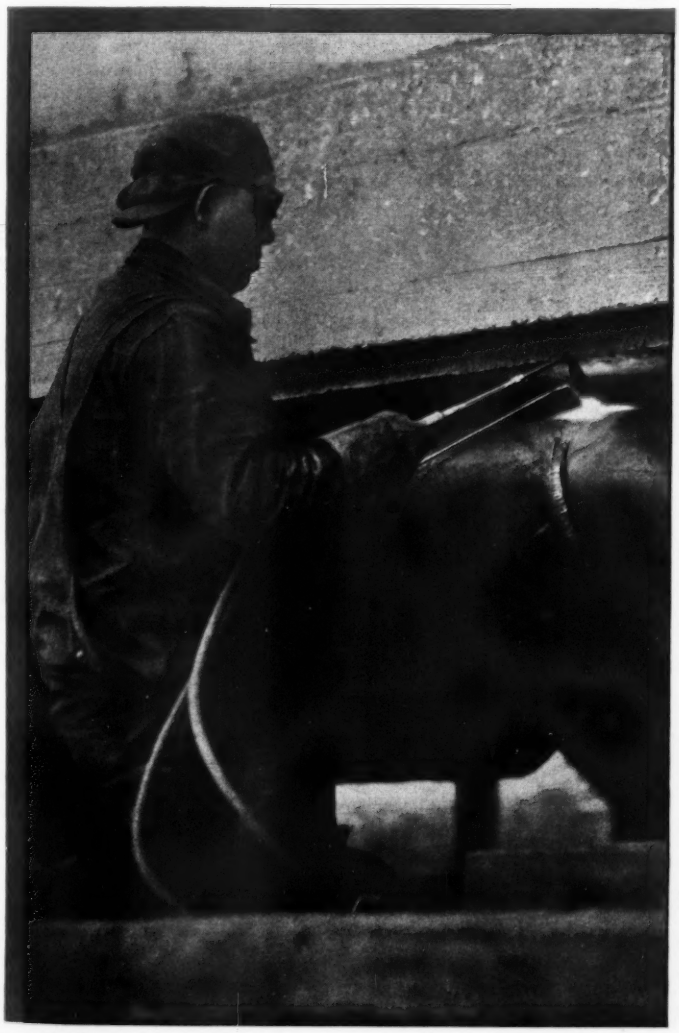
AUTOMATIC HEAT

Two Interesting Temperature Control Installations 97
How to Install, Adjust and Test Conversion Gas Jobs. By L. C. Price 99
Engineering Forms the Basis of Our Stoker Sales. By James H. Meredith 105
How Insulation Influences Fuel Consumption. By A. P. Kratz 111

SPECIAL DEPARTMENTS

Editor's Page 32
Our Industry 35
Questions and Answers 67
Retail Advertising Service 62
Supply News 119
Markets 133
The Trade 135
New Trade Literature 149
New Contractors and Incorporations 153
Woman's Page 155
Epigrams 158
Plumbing and Heating Patents 159
Index to Advertisers 164

BYERS GENUINE WROUGHT IRON is famous for its WELDING QUALITIES, too!



THERE is another vitally important characteristic quality of Byers Genuine Wrought Iron besides its famed corrosion resistance and unusual ductility. And that is its inherent welding ability. The reason for this additional wrought iron advantage is found in the metal itself. The included iron silicate is a natural flux, which assures strength in the weld zone equal to that of the body metal. Hence Byers Genuine Wrought Iron welds perfectly with gas or the electric arc.

A Byers engineer will gladly discuss this feature with you in detail. Or, write a letter direct to our Engineering Service Department for full information. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

BYERS GENUINE WROUGHT IRON PRODUCTS

PIPE • CASING • COUPLINGS • NIPPLES • WELDING ELBOWS • SPECIAL BENDING PIPE
BAR IRON • TUBING • PLATES • SHEETS • BILLETS

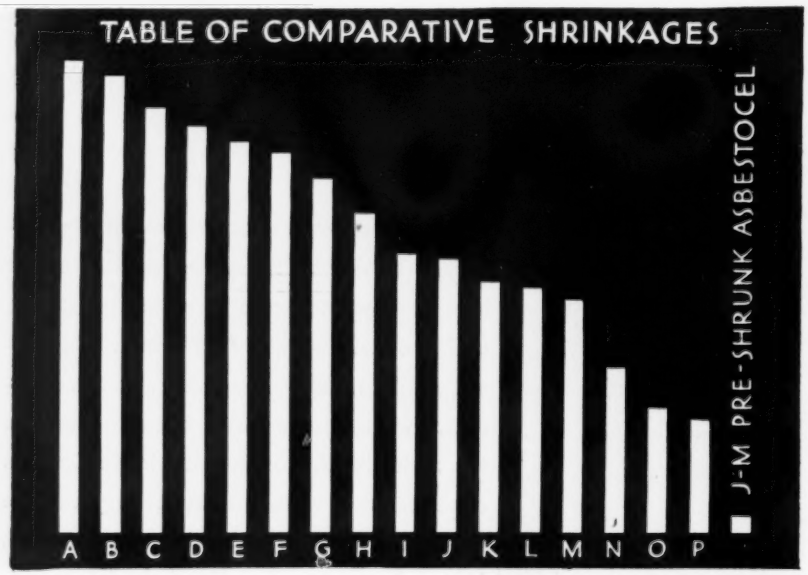
STANDARD OF QUALITY FOR 68 YEARS — TODAY BETTER THAN EVER

MAIN LIBRARY A.

CONVENTION ACCLAIMS

Master Plumbers' Convention hails the end of all objectionable pipe covering shrinkage

Most important improvement in cellular pipe covering since the invention of Improved Asbestocel itself in 1921.. yet it costs no more!



IN EXHAUSTIVE LABORATORY TESTS, engineers compared 16 leading brands of cellular coverings with J-M Pre-Shrunk Asbestocel — under conditions comparable to service in the field . . . proved that the *average* shrinkage for the 16 brands was 21.3 *times as much* as for Pre-Shrunk Asbestocel.

ELEVEN years ago J-M engineers developed Improved Asbestocel—the most significant advance in cellular pipe covering up to that time . . . long-lasting, efficient, economical.

You have proved its merits in actual use . . . found in it only *one* shortcoming . . . a defect inherent in *all* cellular pipe coverings . . . a defect you *had* to take for granted.

That defect was *shrinkage*. To *hide* the gaps it caused—we all resorted to a makeshift—you as appliers, we as manufacturers. The defect was covered with canvas.

But the makeshift didn't *eliminate* shrinkage . . . failed time and again even to hide the bad appearing open breaks . . . and the canvas in no way reduced the loss in insulating efficiency caused by the shrinkage gaps.

But now, after five years of work, our engineers have developed a radically new improvement in cellular pipe covering that under the severest tests shows no objectionable shrinkage . . . no unsightly gaps . . . causes no profitless repair calls.

This new pipe covering is J-M *Pre-Shrunk* Asbestocel.

J-M Pre-Shrunk, in the familiar canvas-covered type, not only incorporates all the features of our famous product, Improved Asbestocel, but has the additional advantage—the elimination of objectionable shrinkage . . . ***and yet, costs no more.***

Why Pre-Shrunk Asbestocel ends shrinkage troubles

Ordinary cellular pipe covering always shrinks — Why? Because ordinary Asbestos paper absorbs moisture while in stock or during installation. The pipe covering expands. When heat is turned on, this covering dries out . . . shrinks . . . sections pull apart at the joints . . . gaps give the job a bad appearance.

Because Pre-Shrunk Asbestocel is made from *waterproofed* paper, the cause of shrinkage is removed. It will retain its original size without alteration. Look at these test pictures at the right. Note how ordinary asbestos paper soaks up water like a blotter while none penetrates the *waterproofed* Pre-Shrunk sample.

J-M *"Pre-Shrunk"* ASBESTOCEL

STOP WATCH TEST PROVES 35.2% REDUCTION IN APPLICATION TIME POSSIBLE

On May 17th at the Commodore Hotel, New York, 22 leading contractors and supply men witnessed speed test of Pre-Shrunk Asbestocel — High-speed type.

A typical applier who had never seen High-speed Pre-Shrunk Asbestocel until a few minutes before the test, was given two identical lengths of pipe to cover.

Checked by the judges' watches it took him 10 minutes, 23 seconds to do the job with the canvas-covered type . . . 6 minutes and 45 seconds with High-speed "Non-canvas" Pre-Shrunk Asbestocel . . . a time-saving of 35.2%.

And now . . . for the first time . . . a covering without canvas *that is practical and safe to use!*

OBJECTIONABLE shrinkage has been eliminated! So now Johns-Manville announces the first covering *without canvas* that is safe and practical to use — J-M Pre-Shrunk Asbestocel, non-canvas type. Requires no pasting, slips easily over the pipe like an open book, clinches on tight, with simple, quick fastening staples.

How this High-speed Pre-Shrunk Asbestocel will reduce your labor costs, make increased profits possible was dramatically demonstrated at a recent test made at the Commodore Hotel on May 17th. (The details of this test are explained at the right.) Translate the 35.2% time-saving this test demonstrated into dollars on each job you do and the savings will soon mount into money.

Yet in its serviceable asbestos finish, this High-speed Pre-Shrunk Asbestocel costs you no more than the canvas-covered type.

High-speed Pre-Shrunk Asbestocel is also available in an aluminum finish. When completed with its black decorative bands, it makes an exceptionally handsome job at very little added cost.

Today it's mighty hard to get business that leaves you a worth-while margin. Quality work will do it.

Pre-Shrunk Asbestocel in any of its three types assures 100% satisfaction on every job you do. Gives you the edge on competition that 1932 conditions make more vital than ever before.

* * *

J-M Pre-Shrunk Asbestocel is now stocked by your nearest Johns-Manville Distributor. Available in the traditional canvas-covered type and in the non-canvas type, the latter in Aluminum Finish and Asbestos Finish as desired. For full particulars, see your distributor or write Johns-Manville, 292 Madison Ave., N. Y. C.

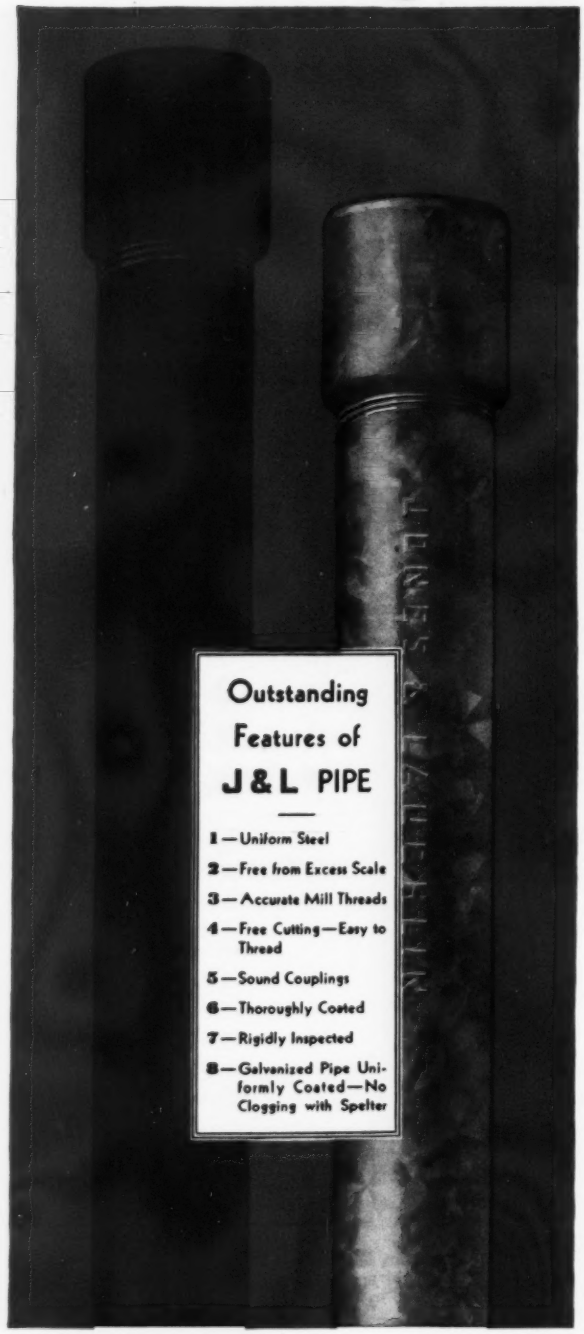
"PRE-SHRUNK" HAS 6 POINTS OF SUPERIORITY

1. *No objectionable shrinkage.*
2. *It is cross-corrugated.* 8 cross-corrugations in each 3-foot section.
3. *It is accurately round*—to make a neat finished job and a perfect fit.
4. *It is hard*— withstands excessive handling and hard knocks — retains its original roundness.
5. *It is uniform.* Every piece gives the same dependable service.
6. *It closes like a book.* Special hinged breaker strip provides a perfect fit. Keep edges always in alignment.

JM PRODUCTS

Johns-Manville
Pre-Shrunk
ASBESTOCEL

THERE ARE good reasons FOR THE success OF J&L PIPE installations



The eight outstanding features of J & L Steel Pipe are responsible for the long, effective service which the product gives.

The quality which assures such satisfaction is constantly maintained through J & L ownership control. Jones & Laughlin owns and operates its own iron ore mines, limestone quarries, coal mines, blast furnaces and mills. Every step in the manufacture of J & L Pipe is carried out by J & L employees, with J & L equipment. Important, also, is the experience gained by J & L in manufacturing iron and steel for 82 years.

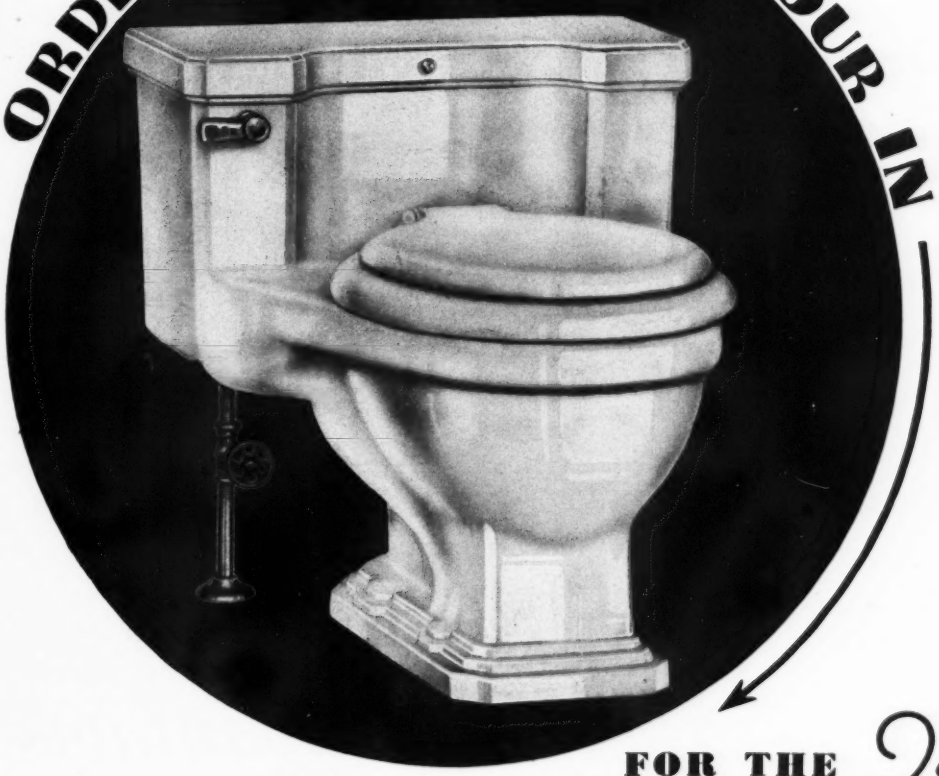
Specify J & L Pipe for your next job. Its uniform excellence will be an important factor in the success of the installation.

J & L CONSTRUCTION PRODUCTS
LIGHT WEIGHT ROLLED CHANNELS
JUNIOR BEAMS — STEEL PIPE
BARS for CONCRETE REINFORCEMENT
STANDARD STRUCTURAL SHAPES
STEEL PILING — NAILS — TIE WIRE
FABRICATED STRUCTURAL WORK
including Steel Plate Construction

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

ORDERS CONTINUE TO POUR IN



FOR THE *Quiet*

"Standard" ONE-PIECE CLOSET

QUIET—Cannot be heard outside the bath or toilet room.

ONE-PIECE—Tank and bowl of genuine Vitreous China.

ATTRACTIVE—Typical of the skill of "Standard" designers.

COMPACT—Requires less space than the usual closet.

ECONOMICAL—Can be flushed with four gallons of water.

COMPLETE—With fittings, supply pipe and seat.

Since the first announcement of the new Quiet "Standard" One-Piece Closet orders have been flowing in by wire, telephone and mail. Not in years has a newly introduced product been so enthusiastically received by dealers everywhere. This flood of interest has made it necessary to expand production plans to meet the great nation-wide demand for the Quiet "Standard" One-Piece Closet.

Dealers in all parts of the country will be displaying and selling this new fixture. They will be opening new markets and reaping new profits. You, too, can make immediate sales and profits by showing the Quiet "Standard" One-Piece Closet and using the attractive free sales helps available. Write for them today!

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

"Easy to sell them Brass when you *explain its advantages*"

Say this to your next customer: *"Brass Pipe will save you far more than its slightly higher first cost."* Sell the savings of durable pipe

MOST of your customers are familiar with these two facts—that pipe that rusts will some day cause expense; and, that Brass *cannot* rust. A great majority of them will readily pay a fair price for Brass pipe, when they appreciate that the cost of replacing rusted pipe soon amounts to more than the extra first cost of Anaconda Brass.

By explaining these facts, many contractors have built up a profitable Brass pipe business. If your billings have not been increased through the use of Brass pipe, why not try to sell your next customer? Point out that Brass pipe will save far more than its slightly higher first cost. And, when you talk Brass, don't overlook the value to you of the public acceptance of the name Anaconda.

Leading plumbing supply houses carry Anaconda 67 for normally corrosive water, 85 Red-Brass Pipe for highly corrosive water, and Deoxidized Copper Water Tubes. The American Brass Company, General Offices: Waterbury, Connecticut.

ANACONDA
from mine to consumer

ANACONDA BRASS PIPE

Take Sherwood's Tip

Sell More Plumbing

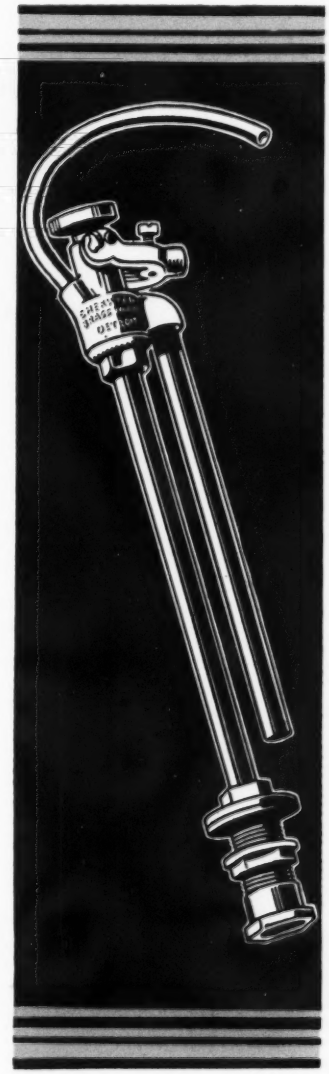
WITH

Sherwood Ball Cocks

If you take Sherwood's tip and start at once to call upon the homes and apartments in your community asking about noisy closet tanks, you'll find that Sherwood Ball Cocks will not only make you an attractive profit but will uncover many other sales opportunities as well.

You'll find homes and apartments needing new pottery, new tubs, new sinks, lavatories, water heaters and other items of plumbing as well as heating equipment.

Take a Sherwood Ball Cock with you and point out to customers how the cost and annoyance of leaky ball cocks may be stopped for good. Show them the Sherwood, explain that it will close against any city water pressure without whistling or gurgling and that its construction details will keep it free from leaks for many years.



The cost of the Sherwood is low for the money it saves and the annoyances it overcomes.

When you have shown the Sherwood, explained what it will do, you'll have an order and the opportunity to suggest other needed improvements.

Order Sherwoods from your jobber today. Take Sherwood's tip.

SHERWOOD BRASS WORKS

Jefferson and Mt. Elliott Aves., Detroit, Mich.

Manufactured and Sold in Canada by W. H. Cunningham & Hill, Limited, Toronto, Ontario

REPRESENTATIVES:

James A. Riordan Co. (Inc.) 1600 E. 7th St., Los Angeles, 5319 Admiral Way, Seattle, 955 Bryant St., San Francisco

E. S. Thompson, 2401 Chestnut St., Philadelphia

Fred G. Hoffman, 831 Edgewood Ave., Trenton, N. J.

Fred S. Wilsey, Plymouth Bldg., Minneapolis

Geo. W. Smith Co., 348 W. Penn Pl., Pittsburgh, Pa.

Chas. F. Stumpf, 417 W. Ohio St., Chicago, Illinois

★ SHERWOOD Ball Cocks ★

The last gasp...

BACK IN THE NINETIES

The gas chandeliers . . . the elaborate frames and screens . . . the crowded furnishings . . . these were modern . . . once. In such a room, so full of furniture, an exposed radiator would not have been particularly objectionable.

Exposed radiators were modern . . . once! But today, the tasteful simplicity of modern homes calls for concealed heating with convectors.*

Don't run the risk of having your work classed as old-fashioned in a year or two. Install Rome Convectors.

Rome has designed convectors and Complete Units (consisting of convectors and enclosures) to meet every modern construction need. Moreover, Rome has standardized them not only as to types and sizes, but also as to methods of installation.

For these reasons, Rome Convectors are readily selected from 21 convenient sizes. They are all easy to install. They are not sold on price. *They are profitable to handle.*

GREATER HEATING CAPACITY . . . LESS SPACE

Besides being *modern*, remember that Rome Convectors are built up to a high standard and not down to a price. They can be counted on for life-long service. They have maximum effectiveness because of the use of copper with its high conductivity . . . the highest of any commercially available metal. This results also in compactness . . . an important item in all modern construction.

ROCOP and ROBRAS Convectors are fully described and illustrated in two Rome Bulletins. Other data included: tables of capacities and weights, dimension diagrams, methods of installation, etc. Rome will be glad to mail you copies.

**The A.S.H.V.E. Guide defines CONVECTOR as "a heater which is enclosed in a duct or cabinet and which gives off heat to an air stream, which passes into a room which is to be heated." Rome Radiation Company, therefore, gives the name Convector to its concealed heating units . . . ROCOP and ROBRAS.*

WANTED . . . Agents of good character and ability to represent Rome Convectors in territories still open. Inquiries invited.

Rome Radiation Company

DIVISION OF

Revere Copper *and* Brass Incorporated

ROME, N. Y.

Plumbing Sells Easier

when you talk

P R PIPE

(PAUL REVERE PIPE)

Suppose it's replacement your customer wants. He figures cost of repairing the ripping up that usually goes with the job . . . the mess and inconvenience. And he hesitates.

You can set him right. Assure him there'll be no wholesale tearing up of walls, floors, tiling. Because, using P R Pipe, Soft Temper, your journeymen can snake it through, behind walls, under floors, in confined spaces. Naturally, with no outside items to load the total cost . . . and the fact that he'll never have to replace again . . . the job is easier to get . . . and means more profit to you.

Suppose it's a new home you are figuring on. You can assure your customer that P R Pipe gives him most for his money . . . that his first cost is his last. Thus P R Pipe helps you sell and your profit is greater than on rustable pipe.

P R Pipe is permanent, of course . . . being made of 99.9% pure copper, and completely deoxidized. It is joined by compression or solder fittings, saves the excess metal ordinarily required for threading . . . a real source of economy. (P R Pipe has the effective thickness of S. P. S. pipe.)

Here is another reason for economy. P R Pipe, either Hard or Soft Temper, can be bent to meet installation needs, thus saving in the number of fittings.

✣ ✣ ✣

For these reasons, we say that plumbing sells easier when you talk P R Pipe. This is not a mere claim. It is something that's been proved over and over by master plumbers throughout the country.

Why not write for complete information to Revere Copper and Brass Incorporated, 230 Park Ave., N.Y.C.

Revere Copper *and* Brass

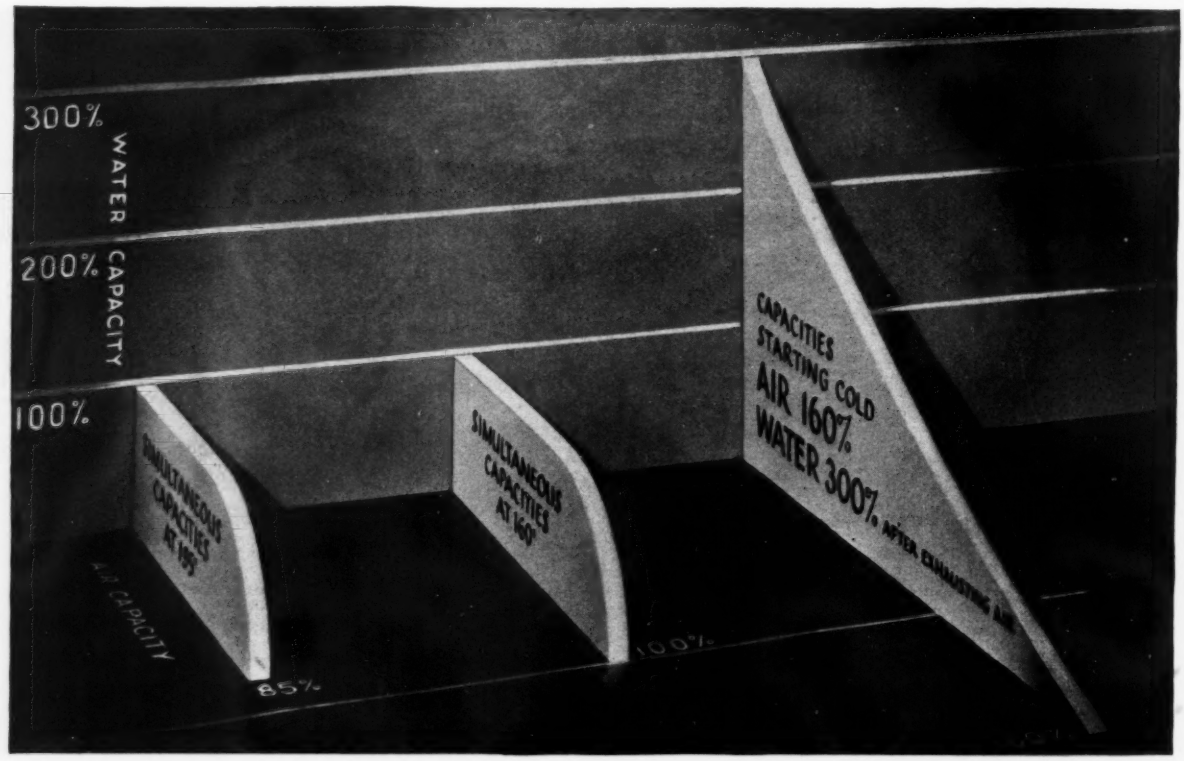
INCORPORATED

P R PIPE

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

An Announcement



In this new Vacuum Pump, Hoffman-Economy engineers have built a higher standard of efficiency and all-around performance that challenges comparison! Improved in design . . . in appearance . . . in greater air and water capacity . . . in ability to handle water almost at the boiling point . . . in accessibility! Quiet as a church mouse! Sturdy all cast iron construction!

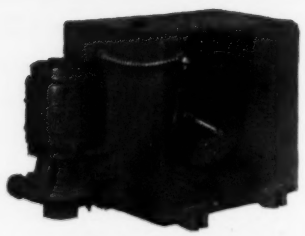
Look at its performance—under every operating condition! Read here the actual test figures on a Model DV 6.

When started cold, air capacity is 160% of rating. When air is exhausted and the flood of initial condensate reaches the pump, it is removed at the astonishing speed of 300% of rated capacity.

At 160° water temperature and 6″ vacuum, pump capacity is 100% for simultaneous removal of air and water. Note that "*simultaneous*"! Therein lies the reason for Hoffman-Economy superiority.

And at 195° and 3″ vacuum, the pump discharges 85% of rated capacity in air and 100% in water. Give credit here to the exclusive Hoffman-Economy Jet Type Vacuum Producer—the simplest and most effective method of exhausting excessively hot water and air.

Check these figures against any other *authenticated* performance tests. Remember, too, that all this super-service is available at smaller power cost, lower original cost. Hoffman Specialty Co., Inc., Dept. RX-83, Waterbury, Conn.



Advanced Design
Condensation Pumps

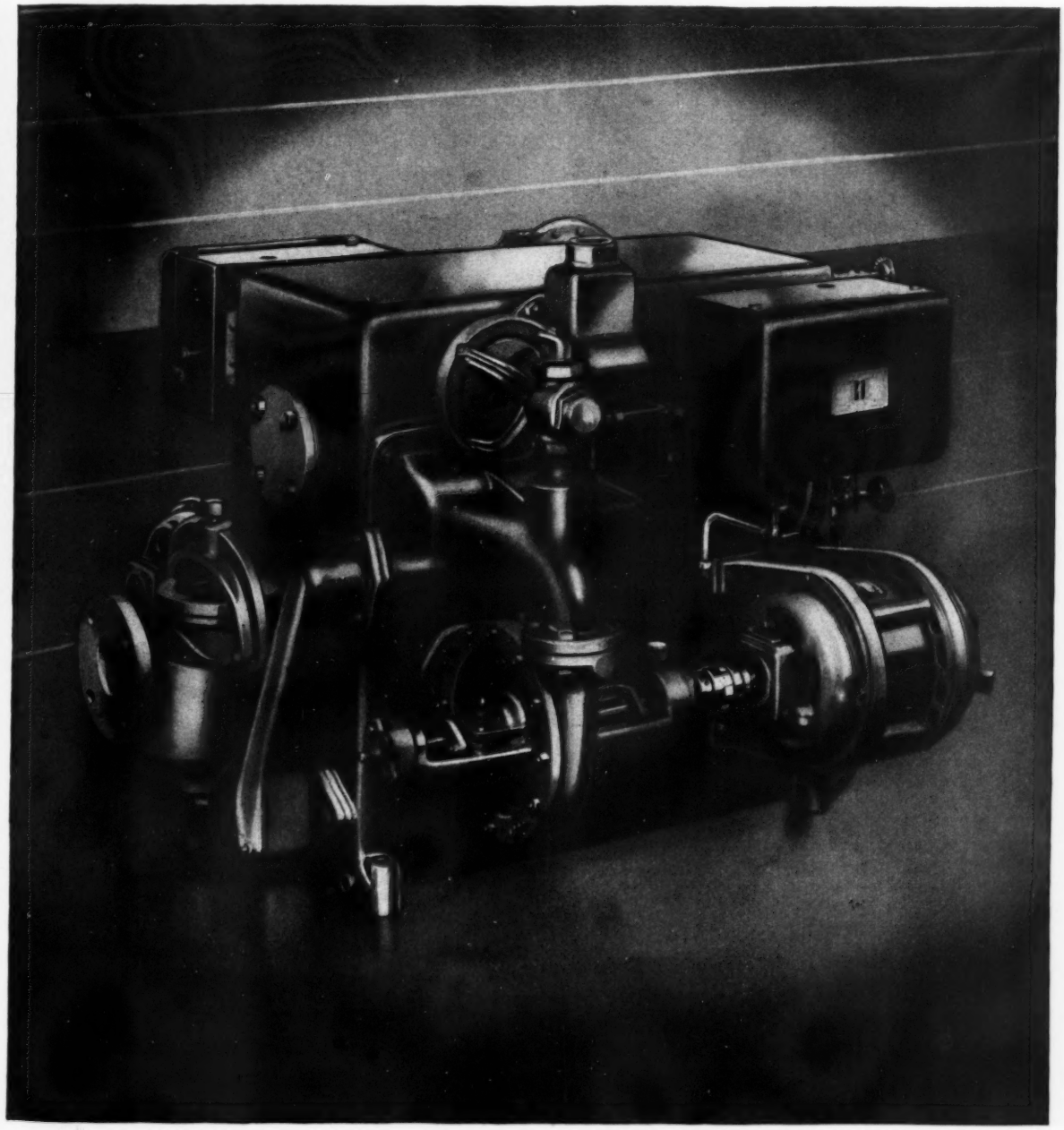
The new design of Hoffman-Economy Condensation Pumps introduces an extraordinary advance in compactness, long life and efficiency. These pumps use a minimum of floor space—handle hotter water than ever before. Hoffman-Economy Pumps have always featured a low inlet . . . in this improved design it is even more conveniently placed. And prices are materially reduced.

WRITE FOR BULLETINS GIVING FULL

HOFFMAN-ECO

ALSO MAKERS OF HOFFMAN VENTING

and a CHALLENGE!...

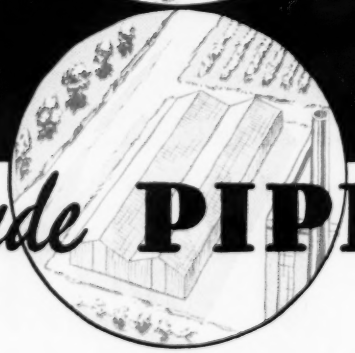


INFORMATION ON THE *New Hoffman-Economy Pumps*

NOMY PUMPS

VALVES AND HOFFMAN CONTROLLED HEAT

If you want the last word in copper-bearing pipe ...*send for this booklet.*



A handbook of valuable information—this publication deserves a foremost place among your data books . . . contains a brief but comprehensive summary of the development, properties and applications of Copper-Clude—a modern achievement in corrosion resisting pipe—a pipe that strikes an ideal balance between initial cost and ultimate service in all tubular installations exposed to atmospheric corrosions.

Write today for your copy

SPANG, CHALFANT & CO., INC.

GENERAL OFFICES: CLARK BUILDING
PITTSBURGH, PA.

Sales Offices: New York, Boston, Pittsburgh, Chicago, St. Louis, Tulsa, Los Angeles, Dallas, San Francisco
Welded Mills: Etna, Penna., Sharpsburg, Penna.
Seamless Mills: Ambridge, Penna.

SPANG *copper-clude* PIPE

A *better* valve for the same price—

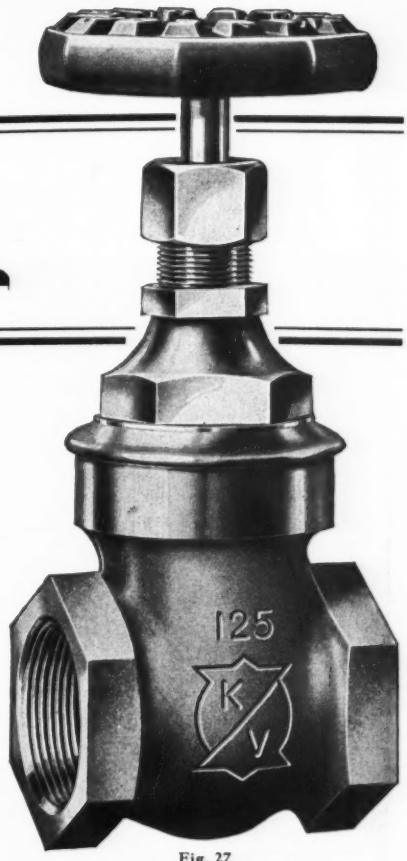


Fig. 27
Kennedy Bronze Gate Valve
for 125 lb. steam pressure and 175 lb. water pressure

BETTER, because this new Kennedy Standard Bronze Gate Valve is heavier, stronger, easier to install, and will give longer and more satisfactory service.

When your pipefitters connect up a Kennedy Fig. 27, they will find that the large number of sharp, accurately cut pipe end hex threads enable them to make up tight joints quicker and without strain on pipe or valve.

When these valves are tested on the complete job, the stuffing boxes and threads will prove to be tight, and the bodies thoroughly sound.

In service, your customers will find the valves will operate easily and close tightly, and will not require attention for unusually long periods.

Order the new Kennedy Fig. 27 for your next job. When you receive them notice their uniformly ruddy, true-bronze color, their remarkably clean, smooth texture, their unusual weight, their ease of operation, and their attractive appearance. You pay no premium for the extra value in Kennedy Valves, for they are always sold at standard market prices. On the other hand, they protect your profits, especially when you must figure closely, for Kennedy Valves and Pipe Fittings help to speed up pipe-fitting jobs, eliminate make-overs, and prevent costly trouble jobs.

You can obtain all Kennedy Products from your local dealer.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

Branches and Warehouses in Principal Cities

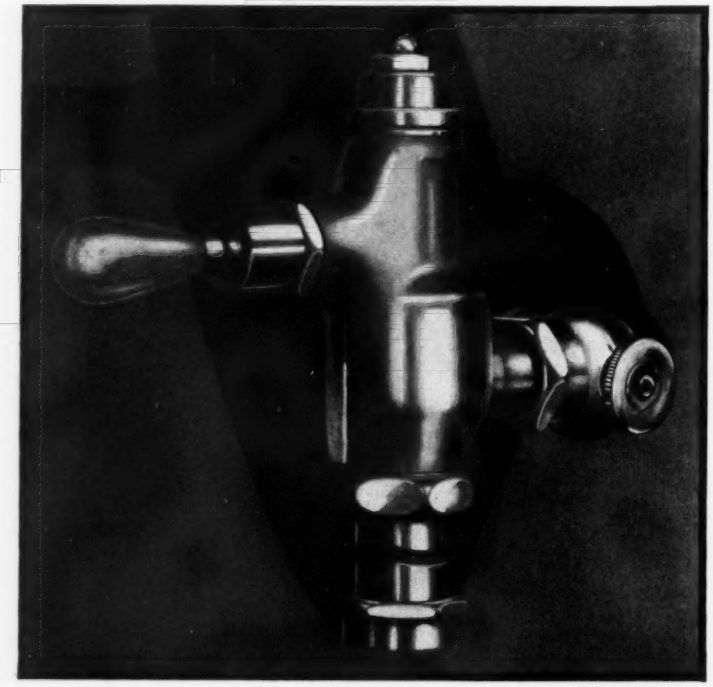
KENNEDY
Fittings, too

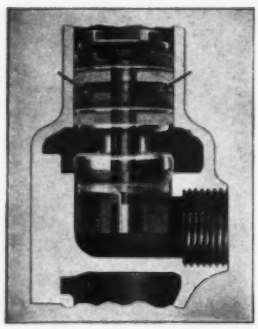
Complete lines of black and galvanized malleable iron screwed fittings, brass or bronze screwed fittings and standard cast-iron flanged fittings and flanges are also included among the large list of Kennedy Products—an additional advantage of standardizing on Kennedy.

KENNEDY
VALVES-PIPE FITTINGS-FIRE HYDRANTS

Only the Scovill Flush Valve is

SELF-LUBRICATING





THE SELF-LUBRICATING FEATURE

The arrows indicate the life-prolonging lubricant packed in the valve plunger. All features of the Scovill Flush Valve are covered by design patents No. 1,600,774 and No. 1,813,709.

• • •

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE • CONNECTICUT

Scovill Flush Valves . . . Shower and Bath Fixtures . . . Tubular and Miscellaneous Plumbers' Brass Goods for General Plumbing Requirements.

WHAT does this self-lubricating feature mean to the plumbing contractor? A flush valve that operates smoothly, easily . . . that gives many more years of service than the ordinary type. A flush valve that the plumbing contractor can install, and be sure that he has given his customer a dependable, trouble-free job.

The self-lubricating feature is simplicity itself. Each valve plunger is equipped with a chamber in which a lubricant is permanently packed. This lubricant preserves the softness and pliability of the leather washer, provides a film that keeps the washer from wearing against the metal cylinder wall.

The Scovill Flush Valve has other advantages. It is designed for quick installation, according to standard roughing-in dimensions. The flush can be regulated from the outside, without shutting off the water. The by-pass is self-cleaning. Balanced piston construction eliminates water hammer and assures operation under low pressures, given sufficient volume.

To the making of this valve, Scovill brings 129 years' experience, unusual manufacturing facilities, and exacting laboratory control of materials. There is a Scovill Flush Valve in the style, finish and price you want. Send for the special booklet presenting the entire line of valves.

SCOVILL

Scovill

This Exclusive Feature makes GREATER STAMINA certain!

ONLY Square "Gees" have the added stamina, the increased strength, afforded by the truss reinforcement. Trus-Fittings protect your time schedule . . . assure connections that stand up under extra strains or loads. And Grabler's unusual care in manufacture . . . outstanding facilities in men, machines and methods . . . make certain of fittings that start quick, that "come tight" in a hurry. You will find uniform dependability in every Square "Gee" product, honest merit that cuts your costs and helps you do a better job.

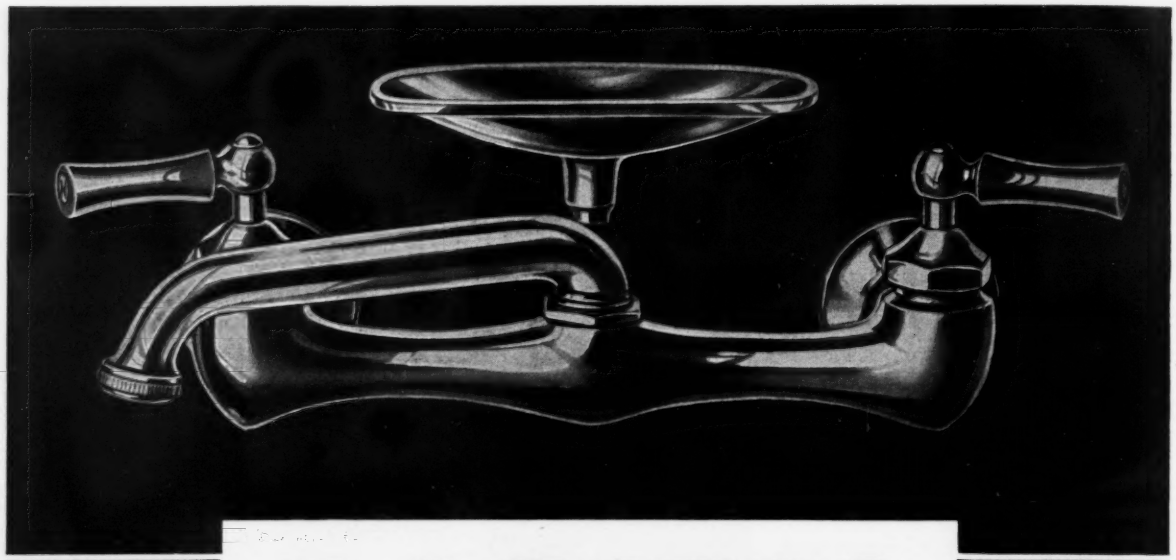
THE GRABLER MFG. COMPANY
6565 BROADWAY · CLEVELAND, OHIO
Warehouses: New York, Chicago, Los Angeles, San Francisco

THE SQUARE "GEE" LINE INCLUDES: Standard and Extra Heavy Malleable Fittings . . Standard and Ground Joint Unions . . Rail Fittings . . Standard Cast Iron Steam Fittings . . Standard and Patented Cast Iron Drainage Fittings . . Standard and Extra Heavy Brass Fittings . . Brass Unions . . Steel and Brass Nipples . . Hangers . . Floor and Ceiling Plates.

YOUR FITTING PROBLEM IS SOLVED WHEN YOU SAY "SQUARE 'GEES'"

SQUARE Pipe — **"GEE" Fittings**

MALLEABLE, CAST IRON — DRAINAGE, BRASS



CAPITOL 910 SINK FIXTURE

For homes where only the best will do, or where the housewife takes a particular pride in dressing up her kitchen, this Capitol Sink Fixture is, we believe, the handsomest and finest-built fixture anywhere obtainable.

Chrome-plated throughout, the soap dish and handles are also of metal. Or, at your option, china soap dish and china handles can be furnished.

Eight-inch centers with either female eccentric or male adjustable couplings. Especially suited to the new, low-backed sinks.

Made in plants where precision workmanship is the only kind tolerated, this fixture is as finely made as the most modern industrial methods enable. It is an aristocrat in its field.

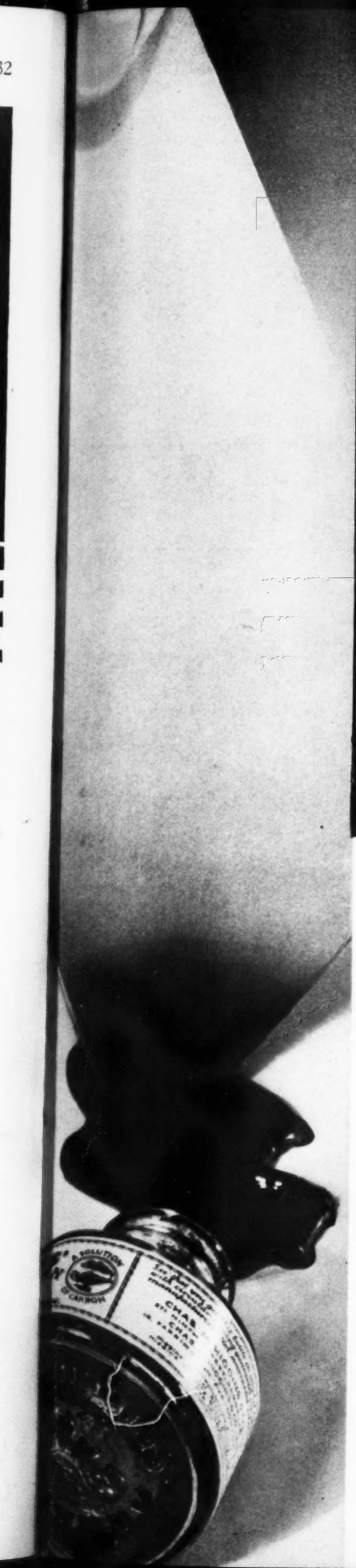
The better plumbing supply houses throughout the country display and furnish Capitol fixtures.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN



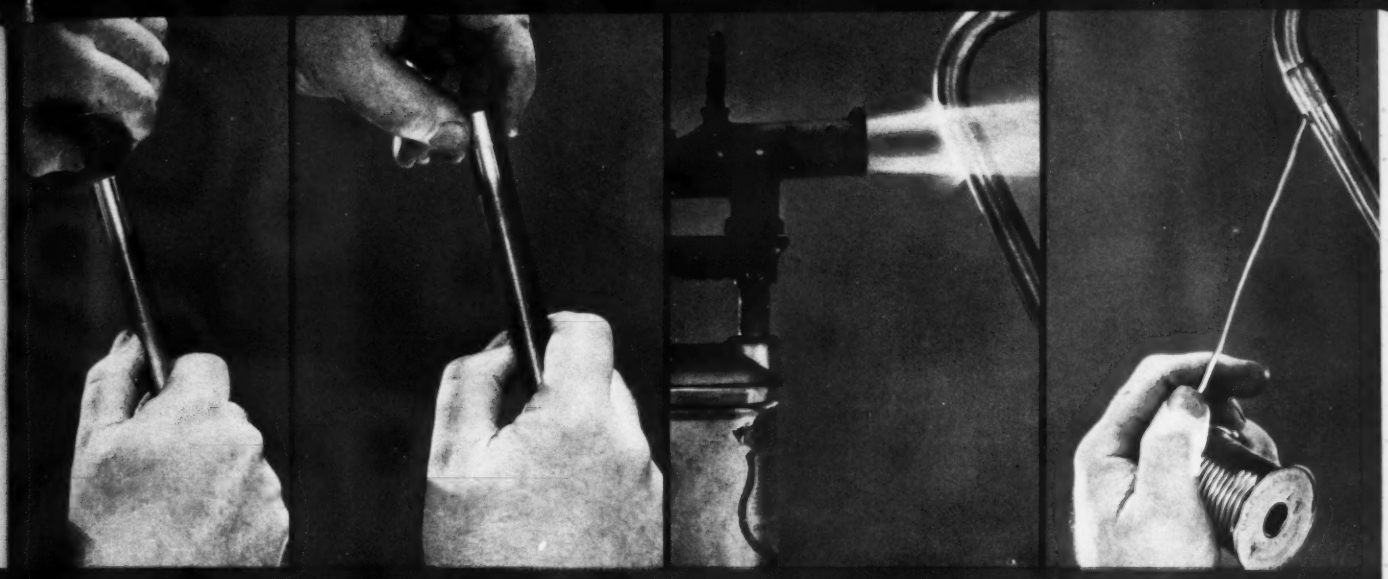
CHASE PUTS AN OLD LAW OF NATURE TO WORK...

IT GIVES YOU a RIGID COPPER WATER SYSTEM at *little more than the cost of* **THREADED IRON PIPE!**

THE SAME POWER (*capillary attraction*) **THAT PULLS INK UP INTO A BLOTTER . . . . PULLS SOLDER 27 INCHES OR MORE**

CHASE "SWEAT FITTINGS"

FOR USE WITH CHASE COPPER WATER TUBING



STRENGTH AND PRESSURE TESTS

and other profitable information

FOR PLUMBERS "FROM MISSOURI"

● Chase Tube and Sweat Fittings are made to close tolerances. They fit snugly. Cleaned, fluxed, and heated, *they tin themselves* all the way up—instantly—at the touch of Chase Wire Solder. "Capillary attraction" sucks the solder all around and completely up to make a perfect joint.

When you've made a Chase Sweat Fitting joint, 3800 pounds* won't pull it apart. You can tell the world and your customers that twenty times their city water pressure wouldn't even raise a lump in an assembly of half-inch hard-drawn Chase Copper Tube and Sweat Fittings.

And, of course, then there are no threaded joints to cause trouble.

BUT a better selling point to tell your customers is that you can NOW give them a rust-proof water system at little more (if any more) than the cost of rustable pipe. Good news for them. Very profitable for you!

Chase male and female adapters are not cast, but are wrought from solid red brass rod.

*4300 pounds if it's a Chase Tee. 4000 pounds if it's a Chase Adapter. *From actual tests on ½" fittings.*

CHASE "SWEAT" FITTINGS

FOR USE WITH CHASE COPPER WATER TUBING

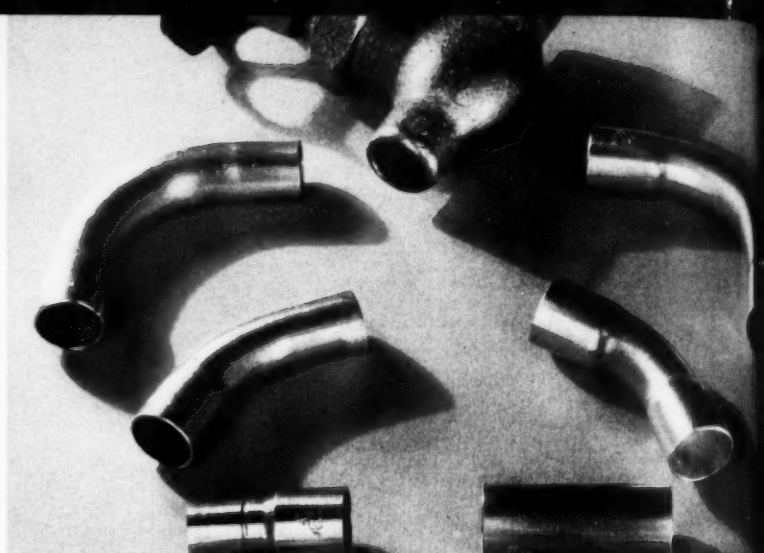
NO THREADED

JOINTS TO LEAK

OR CAUSE TROUBLE

. . . A CLEAN

PROFESSIONAL JOB



STRENGTH AND PRESSURE TESTS

and other profitable information

FOR PLUMBERS "FROM MISSOURI"

● Chase Tube and Sweat Fittings are made to close tolerances. They fit snugly. Cleaned, fluxed, and heated, *they tin themselves* all the way up—instantly—at the touch of Chase Wire Solder. "Capillary attraction" sucks the solder all around and completely up to make a perfect joint.

When you've made a Chase Sweat Fitting joint, 3800 pounds* won't pull it apart. You can tell the world and your customers that twenty times their city water pressure wouldn't even raise a lump in an assembly of half-inch hard-drawn Chase Copper Tube and Sweat Fittings.

And, of course, then there are no threaded joints to cause trouble.

BUT a better selling point to tell your customers is that you can NOW give them a rust-proof water system at little more (if any more) than the cost of rustable pipe. Good news for them. Very profitable for you!

Chase male and female adapters are not cast, but are wrought from solid red brass rod.

*4300 pounds if it's a Chase Tee. 4000 pounds if it's a Chase Adapter. *From actual tests on ½" fittings.*

Monel Metal Sinks Built for Kitchen Duty

• • •

HEAVY GAUGE CONSTRUCTION INSURES

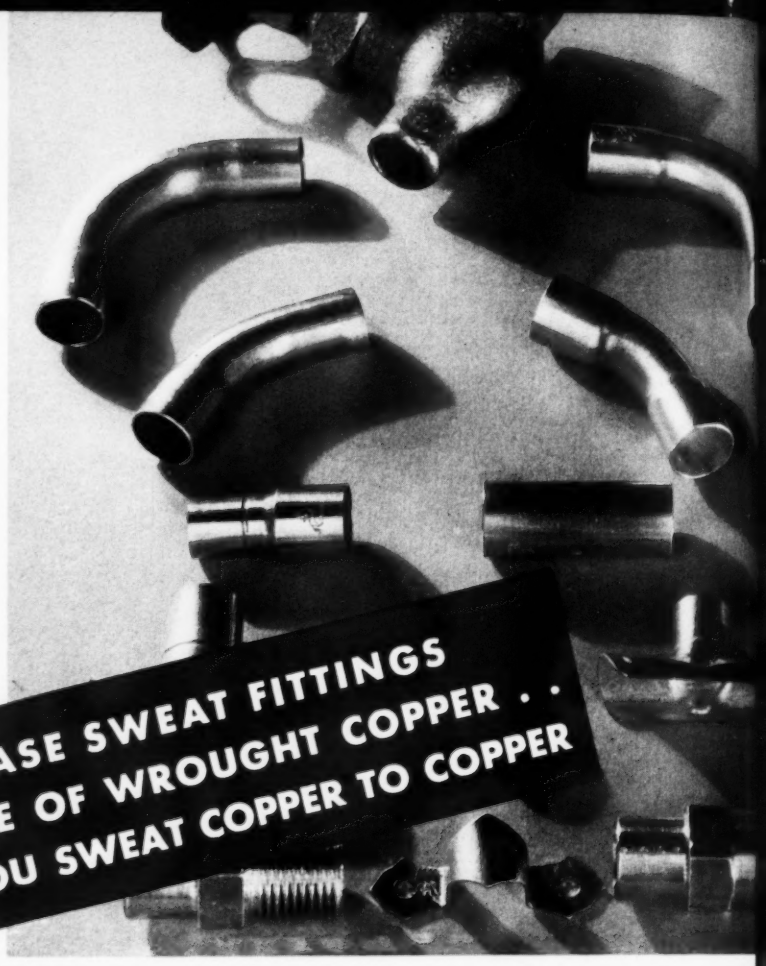
NO THREADED

JOINTS TO LEAK

OR CAUSE TROUBLE

. . . A CLEAN

PROFESSIONAL JOB



CHASE

SWEAT ONE AT OUR EXPENSE

Here's a FREE test kit. See nature's law work in your own shop. Then try to pry apart the Chase Sweat Fitting connection you've made. Mail coupon today!

CHASE BRASS & COPPER CO., Inc. DEa
Waterbury, Connecticut

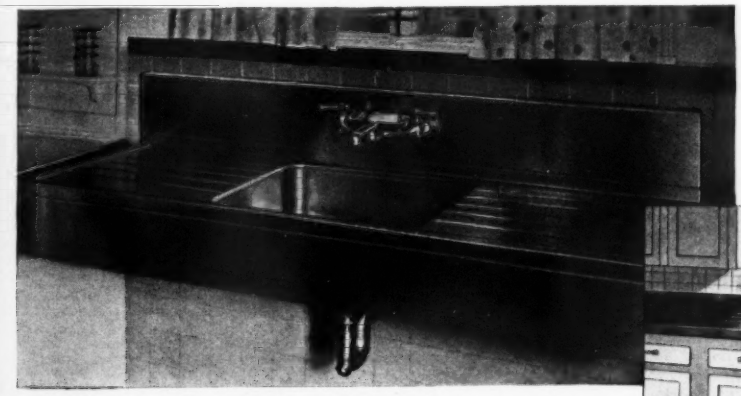
Send me the FREE Test Kit.

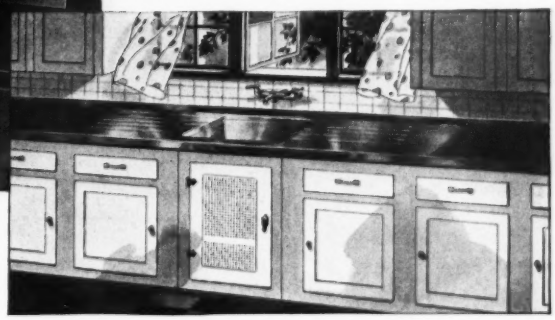
Name _____

Address _____

City _____ *State* _____

Monel Metal Sinks Built for Kitchen Duty





HEAVY GAUGE CONSTRUCTION INSURES LIFETIME SERVICE

● ABOVE: *Double drain board Monel Metal "Straitline"* Kitchen Sink. Available in both 72- and 60-inch lengths. Single drain board models available with either left- or right-hand drain board in 50- and 41-inch lengths.*

● RIGHT: *Double drain board Monel Metal "Straitline"* Kitchen Cabinet Sink. Available in both 72- and 60-inch lengths. Single drain board cabinet sinks with drain board on either left or right side furnished in 48-inch lengths.*

Low prices bring new "STRAITLINE" models within reach of every purse...!

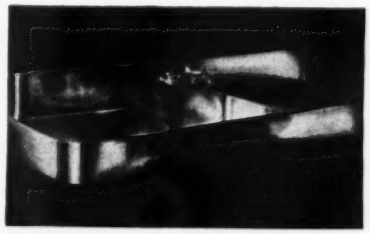
● When your customers ask the questions: "Are Monel Metal Sinks built for everyday kitchen duty?...Will they stand the wear and tear of dishwashing, impacts from heavy utensils, and repeated cleaning?...Will they always keep their 'new', silvery appearance?"...you can answer every query with an emphatic "yes"! You can assure prospects that Monel Metal Sinks are real kitchen sinks in every sense of the word.

Point out that Monel Metal Sinks are made of heavy gauge metal, strongly reinforced to give maximum durability... "built like a battleship". Remind them that Monel Metal is strong as steel, and solid metal clear through with no coating to chip, crack or polish off. Call their attention to the fact that this type of construction eliminates all bulky curves and massive bulges, and gives Monel Metal Sinks their neat, space-saving lines which mean strength without excessive weight.

"Straitline" Models Set Record Low Prices!

To these superior selling points you can now add the welcome news that Monel Metal Sinks are today available at the lowest price levels in history! Your customers can own a Monel Metal "Straitline" Kitchen Sink for as little as $70...50% less than any previous Monel Metal Sink—and approximately the same prices they have been paying for sinks made of less durable and attractive materials. This means that practically *any* family in your community can now afford the beauty, durability and convenience of a genuine Monel Metal Sink!

With consistent advertising to back you up...the *only* sink advertising campaign of national scope appearing today...it's the greatest money-making opportunity in years for wide-awake plumbers. Now's the time to get busy on your fall merchandising plans. If you need any help or information just send us a line.



● *Double drain board Monel Metal "Streamline"* Sink. Available in both 72- and 60-inch lengths. Also available in single drain board and corner sink models.*

* Trade-mark.

8 Money Making Features of Monel Metal Kitchen Sinks!

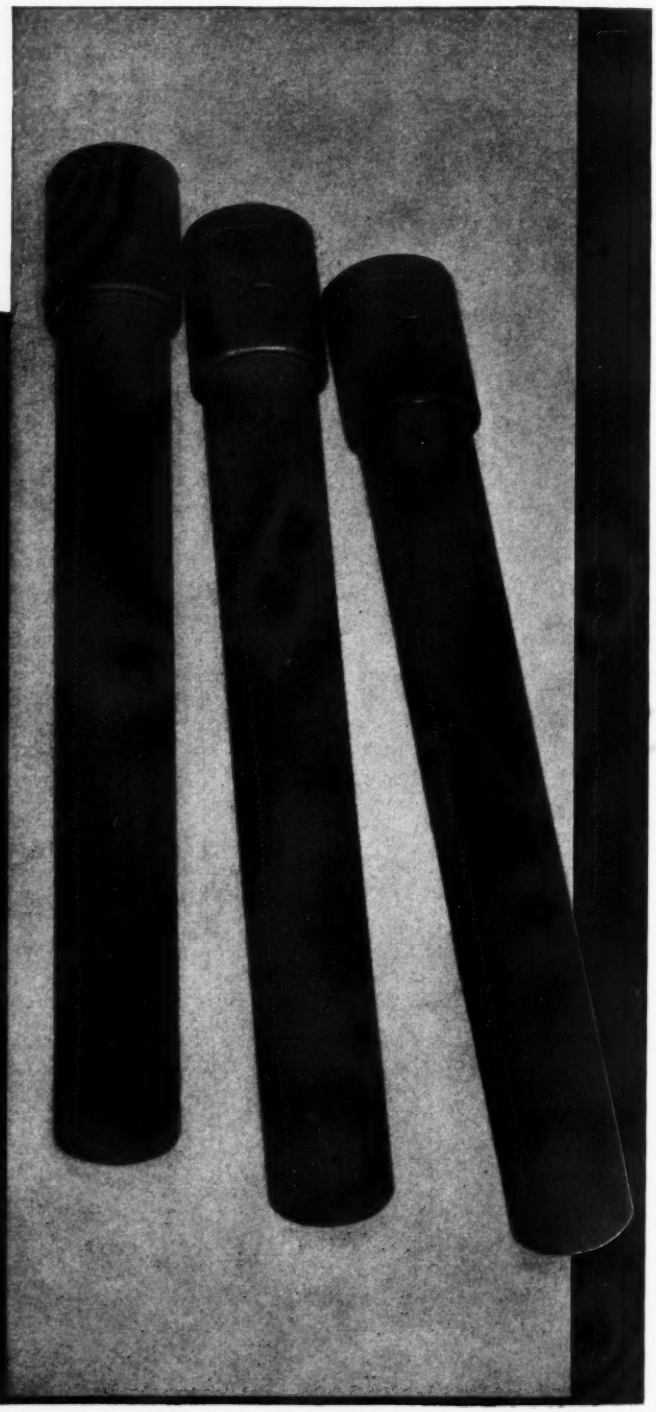
1. Rich, lustrous beauty...with a satiny, glass-smooth surface that's easy to clean.
2. Neutral, silver tone that blends with any kitchen color scheme.
3. Rust-proof, corrosion-resisting ...strong and sturdy.
4. Solid metal...no coating to chip, crack or wear off. Less danger of damage during installation.
5. Monel Metal kitchen sinks are available in a wide range of sizes and prices, including special models for use with built-in kitchen cabinets.
6. More working space than ordinary sinks of same nominal sizes. Reinforced and sound-deadened.
7. Less weight. Saves labor and expense...installing, stocking and handling.
8. Priced within easy reach of nearly every purse, "Straitline" Sinks tap a big new market for you!

MONEL METAL

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

YOUNGSTOWN PIPE



STRENGTH

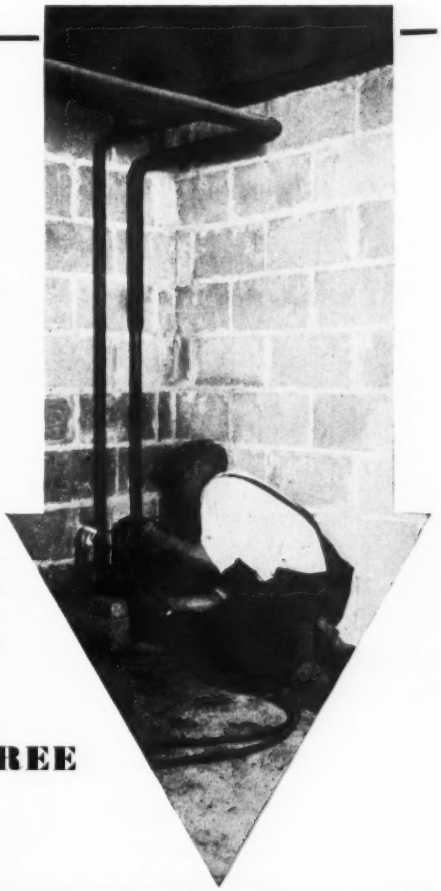
UNIFORMITY

DEPENDABILITY

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES . . . YOUNGSTOWN, OHIO

Are YOU *prepared to make* WELDED Piping Installations ?



WELDED Piping is rapidly coming into its own, in both residential and commercial heating projects. It is being employed with increasing regularity as more and more Architects, Engineers, Plumbing and Heating Contractors are investigating and being won over by its decisive advantages.

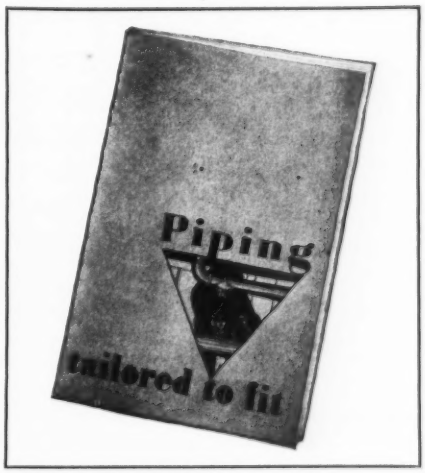
Welded Piping is modern. It represents progress. It is an advanced method of fitting and assembling lines of both small and large pipe, and *its general adoption is inevitable.*

Forward looking members of the heating industry realize this,—they are prepared to make WELDED Piping installations. Are YOU?

AIRCO, a pioneer in the development of welded piping in heating installations, has worked out the details and has perfected the necessary cutting and welding equipment. AIRCO has provided many with complete information on pipe welding and, through its Applied Engineering Department, has helped to make them proficient in its actual application. AIRCO is prepared to do as much for you.

Write for this Book — it's FREE

"PIPING TAILORED TO FIT" tells the story of welded piping in heating installations. It makes clear the advantages. It goes into detail on methods and equipment. It is fully illustrated. Every Architect, Engineer, Plumbing and Heating Contractor should read it. A request to the nearest office listed below will bring you a copy.



WRITE for it TODAY

AIR REDUCTION SALES CO.

Lincoln Building, 60 East 42nd St., New York

A Nation-wide Welding Supply Service— Distributing Stations in All Principal Cities

DISTRICT OFFICES

Baltimore	Buffalo	Cleveland	Kansas City, Mo.	Minneapolis	Pittsburgh	Seattle
Bettendorf, Ia.	Charlotte	Dayton	Los Angeles	New Orleans	Portland, Ore.	Shreveport, La.
Birmingham	Chicago	Detroit	Louisville	Oklahoma City	Richmond	St. Louis
Boston	Cincinnati	Jersey City	Milwaukee	Philadelphia	San Francisco	Wheeling

Represented in Texas by Magnolia Airco Gas Products Co.
Houston, Beaumont, Wichita Falls, El Paso, Fort Worth and San Antonio

DOZENS of HOMES

MEETING THE DEMAND FOR MODERN HEAT

NEAR YOU ARE PROSPECTS FOR MODERNIZATION *with* THRUSH SYSTEM!

ALL you need to get this business is a little enthusiasm, a few calls on prospects -- and a definite IDEA for the inexpensive modernization of the heating plant. Thrush System is that IDEA that will give you an opening wedge and get your prospect interested. Thrush System applied to any hot water heating plant, new or old, makes it more efficient, and provides more enjoyable home comfort. It makes any hot-water job a "closed" system with controlled circulation and reduced fuel consumption. It is inexpensive and easily installed.

MAIL THIS COUPON NOW

Get acquainted with Thrush System and the many efficient devices in the Thrush line which will help you cure sick heating jobs and improve any hot water heating plant, whether coal-fired, oil, gas or stoker job.

H. A. Thrush & Co.,
P. O. Box 459, Peru, Indiana
Send booklet about Thrush System.
We are interested.

Name .....

Company .....

City ..... State .....

THRUSH SYSTEM *of* HOT WATER HEATING

NOW SELL COOLING

New product of one of the world's oldest and largest manufacturers of air conditioning combines cooling with heating at unusually low cost

NOW you can sell comfortable cooling for homes in summer plus proper heating and air conditioning in winter, with the same equipment, at remarkably low cost.

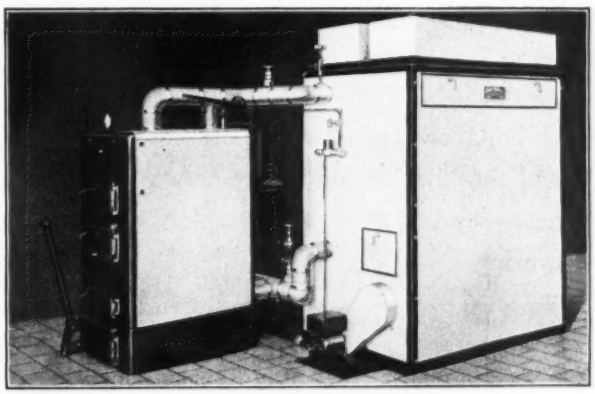
The new Sirocco Series "R" Conditioner for homes furnishes an abundance of cool, invigorating air—makes sleeping a pleasure—and minimizes the possibility of sickness. It cools and ventilates, heats and humidifies. Supplies clean, filtered air at all times.

For cooling, it utilizes tap water (or mechanical refrigeration, when desired). It is automatic, trouble-free, noiseless, dependable.

For heating, it can be used with any simple hot water boiler, burning either oil, gas or coal. It gives positive heat and humidity control—provides proper distribution and circulation of conditioned air. There is no lag in the operation of the electric Sirocco control that turns on the heat the instant the thermostat drops. It provides the home with a constant supply of clean, filtered air.

The Series "R" Sirocco Conditioner installation costs only slightly more (when building) than an ordinary heating system, and can be purchased out of income.

The Sirocco Conditioner Series "O" is a profit builder for businesses that can not be denied. More customers, better customers, satisfied customers, comfortable customers are assets in any business. That is why you can increase your profits right now selling this conditioner to restaurants, dining rooms, coffee shops, stores and offices.



Series "R" Conditioner for Homes

Furnishes cool comfort any day and every day—can be installed easily and quickly. No costly alterations. Remarkably low cost. Use either ice or mechanically refrigerated water. Cools and dehumidifies in summer. Heats and humidifies in winter (by connecting to hot water system). No gadgets to adjust—nothing to get out of order. Just install and turn on the cold for comfort and profit.

Series "O" Conditioner for Business

Prices are unusually low. Time payments are available. Don't overlook this remarkable opportunity for extra profits selling Sirocco Conditioners for homes and businesses. Regardless of the oil burner or equipment you are now merchandising, it will pay you to get all the details. Mail the coupon or phone the nearest American Blower Branch Office.

American Blower

VENTILATING, HEATING, AIR CONDITIONING, DRYING, MECHANICAL DRAFT

MANUFACTURERS OF ALL TYPES OF AIR HANDLING EQUIPMENT SINCE 1881

AMERICAN BLOWER CORPORATION, 6000 RUSSELL STREET, DETROIT, MICH.

Please send me complete information on selling Sirocco Conditioners.

Name _____

Firm Name _____ *City and State* _____

(1233)

Make Your Drive
NATION WIDE

THOUSANDS of home and apartment building owners all over the country are realizing that the difference between an old house and a new one is plumbing and heating.

Thousands of homes everywhere are spending for much needed plumbing and heating improvements.

The "Spend for the Home" drive has helped to bring many of these jobs to the working stage and it is daily driving home the big sales message of our industry today.

It is *your* drive, originated and prepared in many manners of use for you by DOMESTIC ENGINEERING at great expense.

DOMESTIC ENGINEERING has made all of the material on the "Spend for the Home" drive available to you at very low cost. It is your opportunity to tie in with a nation wide drive that has spread into practically every division of the building and home industries.

Write today for any material that you need.

Consult the box on this page for prices.

Enlist in this drive now!

DOMESTIC ENGINEERING
1900 Prairie Ave. Chicago, Ill.

GET your supply of this material today. Here are the prices of the window cards or posters, size, 8¼x12 inches.

The prices of these cards are as follows:

10 cards for 50 cents
25 cards for 75 cents
50 cards for $1.25
100 cards for 2.00
500 cards for 9.00
1000 cards for 17.00

We cannot undertake to ship less than 10 of these cards.

Stickers of the slogan, in the same design as shown above but of 1¼ in. x 2 in. proportions are also available. Order these stickers. Use them on your letterheads, envelopes, billheads, business cards, etc., etc.

The prices of the stickers are as follows:

1000 stickers for $1.50
2000 stickers for 2.50
5000 stickers for 5.00

Get a supply of cards and stickers now.

Electrotypes of various sized cuts of the slogan are also available. These can be had for one and two-color printing. Electrotypes are priced as follows:

Electro for one-color printing, 1½x2¾ in.....$0.35
Electro for two-color printing, 1½x2¾ in..... .65
Electro for one-color printing, 3½x5½ in..... .55
Electro for two-color printing, 3½x5½ in..... 1.00
Electro for one-color printing, size approximately 8x12 in..... 2.50
Electro for two-color printing, size approximately 8x12 in..... 4.50

Order what you need to get in on this big drive now.

A N O T H E R B I G N A T I O N A L J O B

CHICAGO'S *mammoth new* POST OFFICE *warmed by* AERO RADIATION

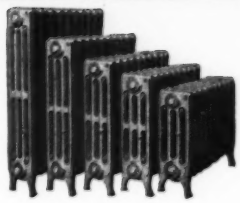
26,000,000 pieces of first class mail, and 20,000,000 pounds of parcel post, can be handled per 24 hour day by the new Chicago Post Office. The 58 acres of floor space almost doubles the previous first-class mail capacity . . . more than triples the parcel post.

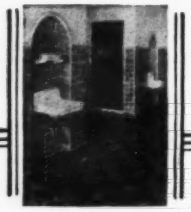
Approximately 800 by 350 feet, with towers 15 stories high, the structure is built on air rights over the Pennsylvania Railroad. Construction is fireproof steel and reinforced concrete, with wood block floors.

Thirty-seven carloads of Aero Radiation will provide dependable warmth for the mammoth structure. This is the second giant order from Chicago, and the third from Illinois, received in the course of the past few months: 20 carloads of Aero Convectors will be installed in the new Field Building, and 30 carloads will be used in Principia College, at Elsah. National, with time-tried products of demonstrated worth, consistently maintains its leadership.

NATIONAL RADIATOR CORPORATION
JOHNSTOWN, PENNSYLVANIA

The new Chicago Post Office Building. Architects: Graham, Anderson, Probst & White. Engineer: G. W. Hubbard. Heating Contractor: H. P. Reger Company. 37 carloads of Aero Radiation will be installed.





BETWEEN OURSELVES

For Summer Use

YOU'LL find this issue planned for you to meet your summer taste. Not only are some of the features especially hot weather subjects, such as a swimming pool article, but several articles are intended to interest the reader who likes a little lighter diet at a time when the vacation feeling is in the air.

A Big Bear Hunt

TAKE, for example, a story on big game hunting—really big this time because they are Kodiak bears, the biggest four-footed animals on the North American continent. And the hunter is a well known leader in the plumbing industry, L. A. Cornelius of Grand Rapids, Mich. Most of us may never plan on facing a big bear at a distance of a few feet, but Mr. Cornelius did and the pictures we show reveal that he escaped to tell you the story. Maybe the training that one gets in the plumbing and heating business is good preparation for that sport.

A Financing Problem

WE find a lot of interest in the new home loan bank law because it is an effort to strike at a condition which has been hurting the plumbing and heating business. That condition is the unsatisfactory methods of financing the building of homes.

Expensive Mortgages

CLARENCE M. Woolley tells you in an interview which we secured for this issue, one striking reason why our schemes of financing homes have been wrong—the period of the mortgage and the period in which the home owner could pay up the mortgage, have not been alike. The owner gets a two, three or five year mortgage with little or no chance to pay it off in that time, so he must renew it with resulting expense and always faces the risk of loss because of inability to secure a renewal.

Easier to Own Homes

YOU will be interested in Mr. Woolley's comments. Like the federal reserve bank act, this is an attempt to set up a banking system doing business largely with banks and loan associations, bringing the practices of these institutions more into harmony with the needs of the individuals and providing a reservoir from which these banks can always draw cash when any threat of a run forces them to dispose of their long-term loans. It may make the advantages of home owning a whole lot easier for the building industry to sell to thousands of new customers.

Air Conditioning and Cooling

AIR conditioning is a subject about which a great deal has been said and written in recent months. A few hot days is enough to make almost everybody talk about it—from the standpoint of cooling. Many are coming to believe that just there is a fact which must be faced and overcome if air conditioning is to progress. The name has been taken by the average person to mean cooling, even while those in the business were thinking also of heating, air motion, humidity, filtering, etc.

Some Costs of Air Conditioning

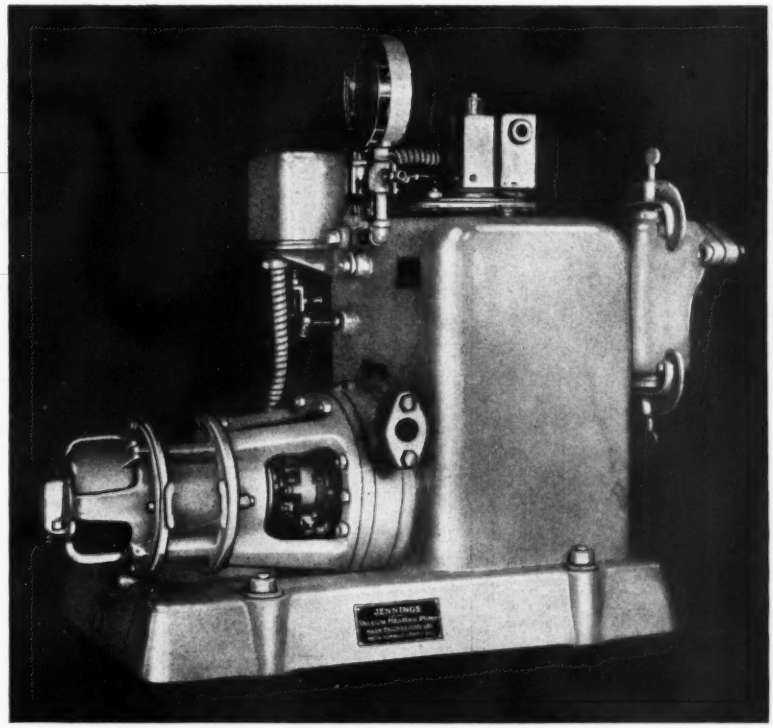
A GROUP of manufacturers, as reported in this issue, are growing disturbed over the possibility that this public impression of air conditioning as a means of being comfortable on hot summer days, may harm the industry. And that some manufacturers and dealers in catering to the desire of the public for coolness may chill the budding air conditioning industry before it is fairly started. An article you'll find in this issue surveys the whole field of air conditioning in a handy tabular form and we open a series of practical articles by giving you facts on the installation and operating costs of a home air conditioning job in which ice is used.

How Sales Are Made

THE other day, a contractor told us of the problem he has been meeting in convincing his old customers that he would handle small jobs—he had always been known as a "big operator." That reveals the swing of many contractors toward remodeling work, a number of whom had previously passed up jobbing work entirely. There's a good article in this issue which sums up the methods by which successful dealers all over the country have been going after and getting modernization work—much of it at non-competitive figures.

Your Editor

IT TAKES GOOD EQUIPMENT to build good-will . . .



A GOOD reputation is always identified with good equipment. This is nowhere more apparent than in your own business. Every valve, fixture or pump you install that bears the name of a leading manufacturer builds good-will for you.

The Unit Manifold Jennings Vacuum Heating Pump, identified by the Nash trade mark, is an example. Sturdily constructed, and specially designed to serve return line systems of 5000 sq. ft. of radiation and under, this pump can be relied upon to give large building efficiency to the heating systems in small buildings. Inspected and reinspected during manufacture . . . tested and checked by actual performance tests at the factory . . . it has earned the right to the Nash mark of quality.

For complete information on the Unit Manifold type of Jennings Vacuum Heating Pump, write for Bulletin 87.

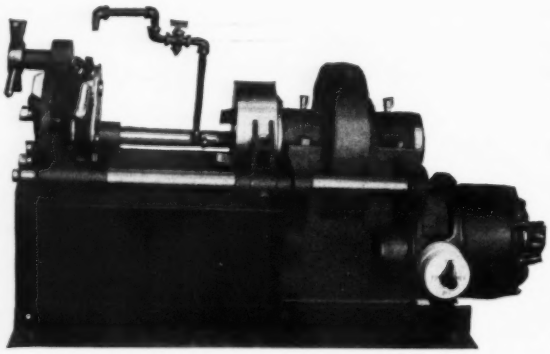
Size U Jennings Vacuum Heating Pump with a capacity of 8 g.p.m. of water and 3 cu. ft. per min. of air. Recommended for return line vacuum steam heating systems of 5,000 sq. ft. equivalent direct radiation.

VACUUM PUMPS AND COMPRESSORS FOR AIR AND GAS · · RETURN LINE AND AIR LINE VACUUM STEAM HEATING PUMPS · · CONDENSATION PUMPS · · FLAT BOX PUMPS · · CENTRIFUGAL PUMPS · · SUCTION (SELF-PRIMING) CENTRIFUGAL PUMPS · · SUMP PUMPS · · SEWAGE PUMPS · · PNEUMATIC SEWAGE EJECTORS

NASH ENGINEERING COMPANY, 41 WILSON ROAD, SOUTH NORWALK, CONN.

Jennings Pumps

THAT'S THE THIRD JOB I'VE LOST!



THE "TOLEDO" No. 999

½-in. to 2-in. Portable Power Pipe Machine with separate quick-opening die heads for each size. Cuts and threads pipe in record time.

Net Price.....$350.00

No. 999 with non-opening die heads and ½-in. to 2-in. dies:

Net Price.....$275.00

How many times have you wondered how competition could afford to make such "ruinous" quotations? "Ruinous" they might seem—but are they?

Hand labor cannot compete with power equipment. Check your method of handling these jobs and see if you have reduced your labor expense and increased the efficiency of your men, by using power pipe cutting and threading machines. You will be surprised at the enormous savings that are possible by using the "TOLEDO" No. 999 ½-inch to 2-inch pipe machine. ½-inch pipe is cut off in 8 seconds, threaded in 8 seconds. 1-inch pipe is cut off in 10 seconds, 2-inch is cut off in 14 seconds, threaded in 16 seconds. Compare this production record with hand labor. "TOLEDOS" will show you the way back to sure profits. A postcard brings complete information. THE TOLEDO PIPE THREADING MACHINE CO., TOLEDO, OHIO, NEW YORK OFFICE, 72 LAFAYETTE STREET.

"TOLEDO"

LET "TOLEDOS" SHOW YOU THE WAY

OUR INDUSTRY

Protect the Progress of Air Conditioning

INTEREST in air conditioning has grown so rapidly that it runs the risk of being spoiled by having too many friends. And the National Association of Fan Manufacturers has accurately outlined a real and necessary job in deciding that "the tremendous public interest in this general subject should not be dulled by unethical sales methods nor ignorant selling or buying of equipment designed for the new conception of human comfort."

What the Public Thinks

THIS public interest in air conditioning is being fed, particularly during the hot summer months, by visions of sure and cheap relief from the heat. Summer cooling is what many people think of when air conditioning is mentioned. The degree of coolness which can be obtained and its cost are likely to be submerged in word pictures unless manufacturers and dealers resolutely limit their sales talks to the actual limits of their equipment.

A Threat to Progress

ALMOST any one can write his own definition of air conditioning. Properly, that definition should take into account the simultaneous control of temperature, moisture content, motion, distribution and cleanliness of the air within an enclosure. But control of any one of these factors can be regarded as air conditioning so that this very liberality of definition threatens the orderly progress of the industry.

Give What Is Wanted

IF your customer wants a better heating service and you can give it to him, it doesn't make a great deal of difference whether you label the improvement as air conditioning—as long as he knows what he wants and gets it. Similarly, you may offer an advanced service in air distribution, motion or cleanliness and retain a satisfied customer if you give him what he is promised. But many people are likely to be misled if they buy summer cooling equipment thinking that a few dollars will bring them complete relief on summer's hot days.

A Limit to Promises

YOU can not afford to offer or install equipment which will do part of a job, if your customer thinks it will do the whole job. A simple, small cooling device may operate satisfactorily in a small room but with manufacturers and dealers thronging into a new industry, the limit of promises may easily go beyond the limit of performance.

Some Expect Wonders

A WIDE variety of equipment is being offered, doubtless capable in most cases of doing a service and adding to the comfort of its purchaser. Properly engineered and manufactured, properly sold and installed, such equipment will add to the comfort of each of us. But led on by glowing phrases about air conditioning as a magical means of being comfortable under all conditions and in all surroundings, the public is gaining an impression that any piece of equipment so labeled will accomplish wonders.

A Real Danger

AIR conditioning as an industry has a promising future. It offers, for example, the means of putting the heating business on to a higher level of service and performance. Better air conditions in winter time can be provided by constantly improving heating plants. Better control of humidity, greater comfort in summer, in all these directions air conditioning opens an avenue for progress in which manufacturers and dealers will find profit and the public will find satisfaction. But the enthusiasm over these developments must not be used to make promises which can not be fulfilled. The public's present enthusiasm must be encouraged and increased by telling them what particular equipment will do, and what it will cost to operate. The need is to give the public more than it anticipates but there is a real danger in giving it less.

What the Federal Home Loan Bank System Will Mean To the Building Industry » » » »

By CLARENCE M. WOOLLEY
Chairman of the Board of Directors
AMERICAN RADIATOR AND STANDARD SANITARY CORP.

PROGRESS in the American standard of living of which we are all so proud, consists in a large measure of improvements in homes. Looking back just one generation we can remember when heating equipment consisted of coal stoves, running water was drawn from a pump in the corner of the kitchen, and the sanitary facilities were in a little house on the back of the lot. Contrast that with present hot water and steam heat and the modern bathroom. Those are the things which have really made all the technical improvements in industry worthwhile. Progress has been rapid, but when we reflect on conditions under which an unfortunately large proportion of the population is still housed, there remains a wide field for improvement.

The creation of the Federal Home Loan Bank System is by far the most important development in recent years in the residential real estate field. For the first time a real solution of the financing problems of one of the major industries, home building, has been attempted.

The Federal Home Loan Bank System will bring a new and important source of funds into the field of financing small homes. It provides for a system of from eight to twelve Federal Home Loan Banks, in some respects modeled after the Federal Reserve Banks. These banks have the power to issue bonds secured by home mortgages. The bonds will appeal to institutional bond buyers, insurance companies, banks, trust companies and others. After analyzing the system carefully, I am convinced that these bonds will be as safe as any that are on the market, second only to those of the United States Government itself. (The Home Loan Bank bill was recently passed by Congress.)

LONG TERM CREDIT

Small home financing has been cursed for many years with a financing plan which isn't suited to its needs. When a man purchases a home, sound financing requires that he use long term credit which can be paid off in monthly or quarterly installments out of his savings. Such money would otherwise go to the landlord for rent. That can't be done in a period of less than eight to ten

years. Instead of such a financing plan, however, the whole business has relied too much on one, two, three and five year mortgages, and I have even heard of some mortgages payable on demand. Each time a mortgage is renewed there are commissions to pay, and in the course of ten years such charges for financing might aggregate 15 to 25 per cent of the cost of the home.

In England and practically all countries of Western Europe governmental or private institutions, or both, have existed for many years to encourage the building of small homes by long term financing of seventy-five per cent of the cost, with partical payments throughout the entire period. The initial small cost or commission for obtaining such financing carries with it expert scrutiny of plans and specifications, land valuations, etc., to insure a sound and proper investment, and such will be the procedure, I assume, of the financial institutions which will be affiliated with the Home Loan Bank System.

Building and loan associations which exist in many of the states in this country have proceeded along the lines of practice followed in foreign countries, and in those states where such associations are regulated by conservative legislation they have proven themselves to be agencies of great advantage to small home owners.

All banks and financial institutions which identify themselves with the Home Loan Bank System will, I assume, follow similar procedure under Federal regulations. This in all probability will encourage banks, trust companies and other financial institutions to enlarge their activities in the small home mortgage field, since the protection afforded by adjusting their operations to the said regulations will not only surround such operations with safeguards heretofore not present, but like the members of the Federal Reserve Banking System, these real estate mortgages can be promptly liquefied by loans from the Federal Home Loan Bank System. This will inevitably encourage a substantial increase in home ownership with all the political and social safeguards associated therewith.

Within a short time we can expect a real stimulus in the construction of small homes. Such construction has been below normal since 1925, which was the peak year for small home construction. The population has continued to increase and homes, through obsolesence, have depreciated so that some which could, by a stretch of the imagination, be considered usable three years ago, are absolutely unfit for occupancy now. The average life of buildings is forty years and, therefore, the principle of obsolesence is a continuing influence. A real housing shortage has already developed in some localities and is on the way in many others. As a matter of fact, small home construction is economically wise in almost every town and city in the country. In certain places, there is still some talk about vacancies and overbuilding, but when the actual figures are analyzed the vacancy percentages are surprisingly small.

"Small home financing has been cursed for many years with a financing plan which isn't suited to its needs ..... The creation of the Federal Home Loan Bank System is by far the most important development in recent years in the residential field ..... Within a short time we can expect a real stimulus in the construction of small homes ..... The principle of obsolescence is a continuing influence ..... If we had some of this needed new construction we could put the building trades to work with improvement in other businesses ..... The Home Loan Bank system deserves careful study and whole-hearted support."

WILL FILL VACANCIES QUICKLY

If we had some of this needed new construction and could put the building trades to work along with the additional improvement in other businesses which it would bring, all of the present vacancies would be taken care of in short order and the real need, which some find it so hard presently to see, would become apparent. It hasn't been possible to bring about this new construction because the financing is not available. The Federal Home Loan Bank System will correct that and should make home ownership more desirable than it has ever been in the past because the home owner no longer need feel that his mortgage will come due at a time when he can't have it renewed. An additional advantage will be lower financing costs again adding to the desirability of home ownership.

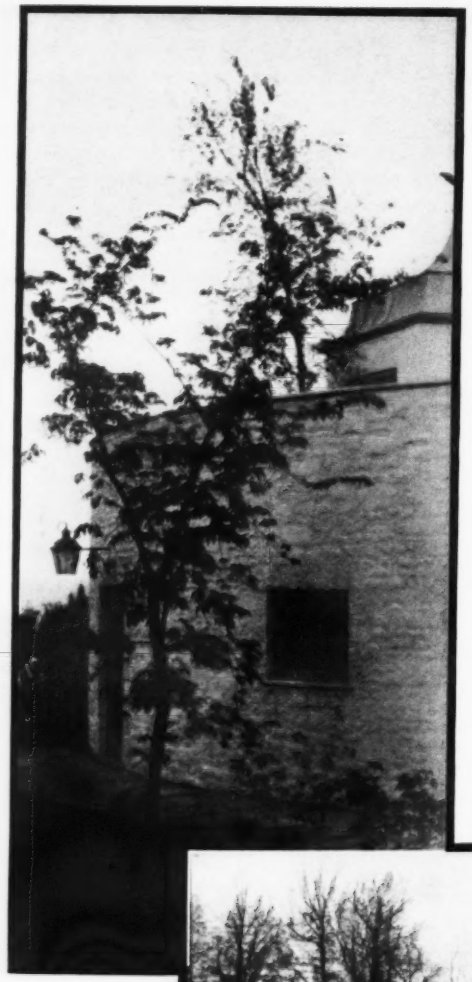
Literally, millions of homes throughout the country, although still sound and useful, are in dire need of repair and modernization for their plumbing and heating equipment. Their owners know the advantages of the improvements which have been developed in the past decade. They would be in the market if they could secure a mortgage to cover the cost or an addition to the present mortgage, which has been substantially reduced by partial payments, sufficient to pay for repairs and modernization. From the point of view of the lending institutions, that type of credit is one of the best which could be advanced because its use adds to the value of the property. However, the lenders haven't had the money to make those loans. They will have it through the Federal Home Loan Bank System.

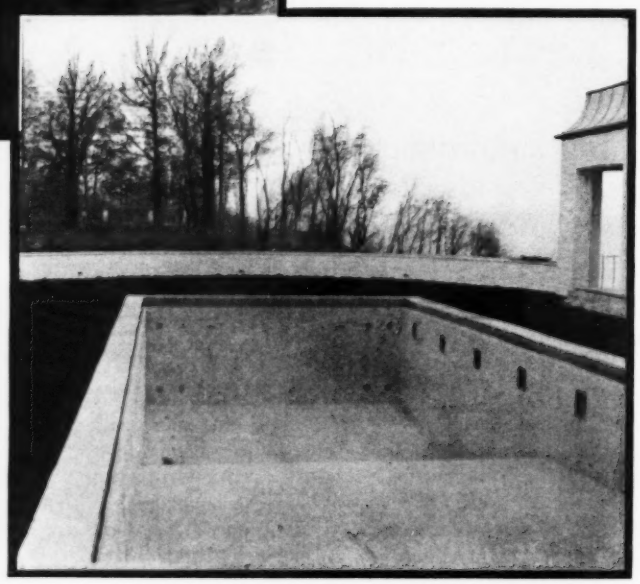
Business in this country is tied up with credit—it is an integral part of the whole chain. Small home credit, however, has been most irregular and expensive and has affected every type of business which is dependent on the home for its existence. The stability given by the new system will remove a large part of that irregularity.

How Swimming on Shore

Rupert J. Weber, plumbing contractor of Chicago, made the installation. The topography of the site was one factor which led to the working out of a number of novel features

By THOMAS R. SHAVER





The upper picture shows the bath house, the roof of which is on a level with the top of the pool. The view at the right shows the pool with the bath-house just beyond it underground. The vent risers are in a high continuation of the garden wall, just outside of the picture at the left

THIS article describes a swimming pool installation in an estate on the north shore of Chicago. The pool is about 300 ft. from an easily accessible sandy beach and lake water. However, there is always a certain amount of surface drainage and other impurities present at this point in the lake. The owner's plans required swimming facilities and safety, for his family and guests, in a greater degree than those furnished by the waters of Lake Michigan in their natural, untreated state.

The main structure of this estate is a large residence building, set with its long dimensions north and south, and overlooking Lake Michigan. There is a formal garden area between the house and the bluff along the shore, and this garden is the most private part of the grounds, since it is away from the service buildings, entrance to the grounds, and the main entrance to the house. When the question of the location of a swimming pool was under consideration the privacy of this part of the grounds made its location here advisable. The addition of a sheet of water, at the level of the ground, had possibilities from a decorative point of view, and the lighting of the pool at night added an attractive feature. The pool was therefore made a major feature of the landscaping plan, with garden walls, stairs and planting arranged symmetrically around its axis.

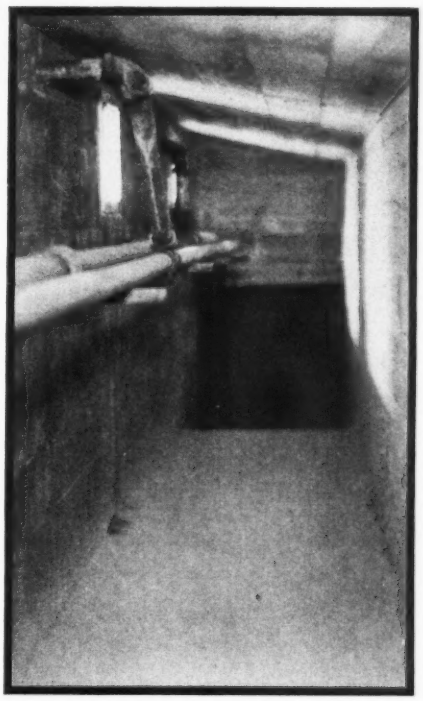
A swimming pool that provides pure water must have considerable mechanical equipment, and this equipment is commonly located in a building which also contains the dressing rooms, showers and lockers. This scheme could be followed here, except that if the building were built in the usual manner, a considerable part of the view across the garden to the lake, from the house, would be shut off. There is a ravine running east and west across the north end of the property, and it was decided to put the building in the south bank of this ravine, below the surface of the garden. The entrance was located in the north wall, facing the ravine, and ac-

Pool Was Built of Lake

cess to it was provided by a stone stair from the garden grade. The garden then was carried across the top of the pool building to the north wall.

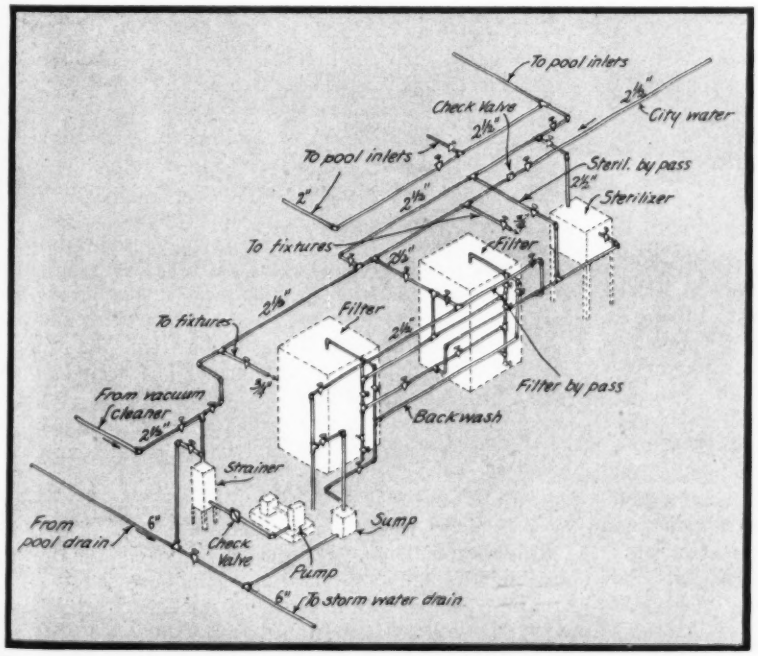
In order to carry out this plan, the building containing the dressing rooms and the machine room, which will hereafter be called the bath house, was built of reinforced concrete walls and a heavy concrete top slab. The pool, while adjacent to the bath house, was separated from it by a continuous joint so that any uneven settlement of the two structures, or the effect of expansion or contraction of either of them, would be concentrated at this joint. There are no short lengths of pipe across this joint. The pool is lined with tile, and the one exposed wall of the bath house, that on the ravine, is faced with stone. This ravine wall is carried up above the garden level in stone to act as a rail. The top slab of the bath house is covered with a continuous sheet of lead to prevent moisture seepage through the roof. There is a tunnel below ground the full length of the pool, on each side, with doors to the machine room, for access to the pool lights.

The water supply for the pool is from the municipal water plant of the section in which the estate is located. Either fresh or recirculated water is run through filters, of which there are two, and a sterilizer, before reaching the pool. Pool drainage and outlets for subsoil, or foundation, tile drains, around both pool and bath house, are connected into a storm water drain and run into the ravine, which provides a natural water course to the lake. There are no surface drains around the pool, as there is merely a narrow stone coping on the pool walls. Sanitary sewage is raised by an ejector and discharged into the main sanitary sewer running from the residence to the street.

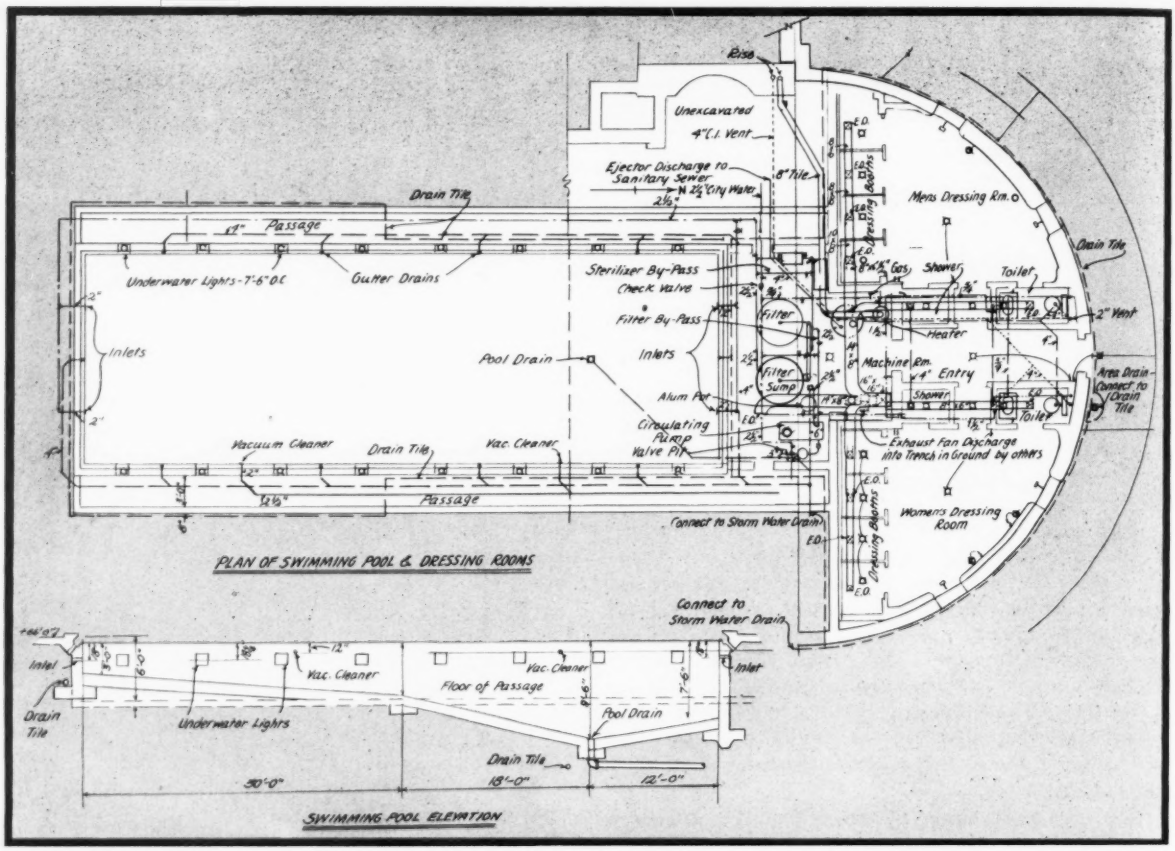


Here is one of the two pipe tunnels running along each side of the pool. The equipment room is at the head of this and the windows form the under-water lighting openings

In detail, the pool is 20 ft. by 60 ft., with a depth of 3 ft. at the shallow end and 9 ft. at the deep end, and has a capacity of 53,500 gallons. The water is brought to the machine room through a 2 in. underground main connected to the 3 in. water service line to the house. Branches are provided to all fixtures in the bath house. Fresh water can be run into the pool directly for cleaning, or can be put through the strainer, filters and sterilizer, and then into the pool. There are four pool inlets, two at each end, and all 1 ft. 6 in. below the water sur-



This shows an isometric drawing of the mechanical equipment and piping for the pool, installed in the concealed bath-house. It is an enlargement of a part of the drawing on the next page



face. Pool water is drained through a 6 in. valved pool drain cross connected into the storm water drain. For recirculating, the pool water is pumped through a 3 in. valved by-pass to a 3 in. twin type hair and lint strainer, thence to the filters and sterilizer, and back to the pool. The pump is single stage, double suction, horizontal split shell, completely bronze fitted and direct-connected by flexible coupling to a 3 H.P., 60-cycle, 3-phase, 220-volt, 1220 r.p.m., squirrel cage motor. The pump has a capacity of 100 g.p.m. against a head of 60 ft. The pool drains into the storm water sewer by gravity. All operating control valves are in the machine room.

PRESSURE TYPE SAND FILTERS

There are two 54 in. vertical pressure type sand filters, each with a capacity to filter 2,900 gallons of water per hour at the pressure of the city mains. Piping is arranged so that either or both filters can be operated or cut out of service, washed, or filtering medium replaced without interruption of service. The filtering material is 36 in. deep, and is silicious gravel uniformly graded from 1 in. size at the strainer to ⅛ in. at the top, and finished with a layer of specially washed and graded silicious sand. A Venturi type flow indicator for each filter shows the rate of flow in gallons per square foot of filter area during either the filtering or backwashing process. There are two cast iron coagulent feeders, one for soda and the other for alum, each with a capacity of 63 lb. and equipped with needle valves.

Here is a plan and elevation of the entire pool and bath-house. The two pipe tunnels are shown running down each side. They permit easy access to the under-water lighting

After filtering, the water passes through an ultra-violet ray sterilizer which has a capacity of 1,500 gallons of water per hour with direct flow from the city mains, or 6,000 gallons per hour of filtered water, and is guaranteed to deliver a water complying with the bacterial requirements for drinking water as set forth by the U. S. Public Health Service.

There is no heater for the pool water, as the temperature of the water leaving the mains in the summer is about 65 deg. Fahr.

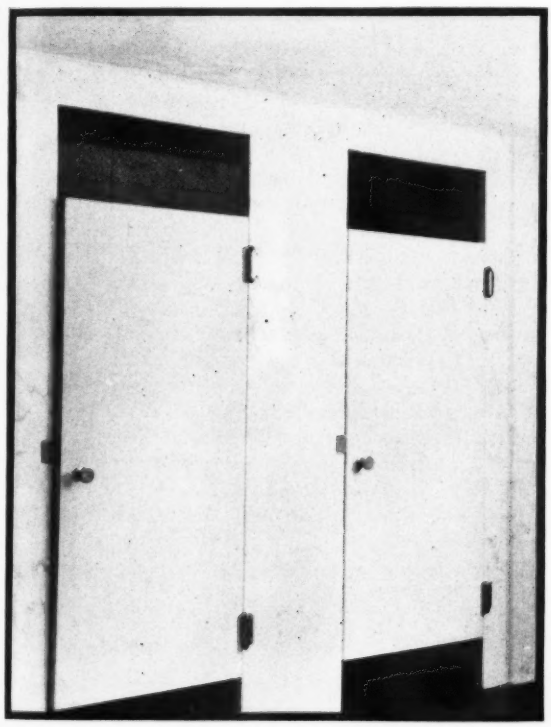
The pool equipment includes two white metal wall flanges, 12 in. below the water surface for the attachment of 50 ft. of special wire-woven rubber lined and covered vacuum cleaner hose, and vacuum cleaner tools, for removing sediment from the pool bottom. The flanges are connected with 2½ in. piping. The recirculating pump provides the suction for operating the vacuum cleaning system. The discharge from the cleaner is drawn through the strainer and into a sump connected to the storm water drain. Ten 2 in. gutter drains are uniformly spaced in the overflow gutter, and connected by 4 in. piping to the storm water drains.

Underwater lighting is provided for by eight 400-watt flood lighting units on each side of the pool, set 18¼ in. from the pool surface to center of the lights. There are double lenses and frames on the pool sides of the units,

and reflectors in back of the lights. The inner lens is a special adjustable diffusing lens to spread the light rays and prevent glare on the water surface. The sixteen units are grouped in eight lighting circuits, controlled in the machine room. Lighting and power subfeeders run underground from the main switchboard in the residence. The passageways on each side of the pool provide a ready means of access for adjusting the focus and the position of the reflector units, and for replacing lamps.

DRESSING ROOMS IN BATH HOUSE

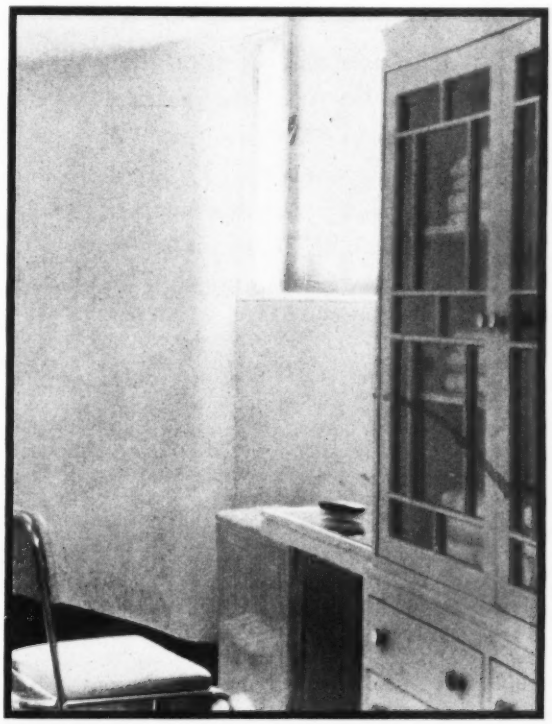
The dressing room portion of the bath house is divided into two rooms, one for men and one for women. Each room has a shower stall, a toilet room with a closet and lavatory, and four dressing booths. Hot water for the showers and lavatories is supplied by an instantaneous type automatic gas water heater having a continuous heating capacity of 6.3 gallons per minute with a temperature rise of 60 deg. Fahr.



The dressing booths are shown here. Four are provided in each room

Since the bath house resembles a cave more than anything else in its location, and is never exposed to direct sunlight, an exhaust ventilation system was installed to prevent dampness in the rooms. The exhaust fan, having a capacity of 1,450 cu. ft. per minute, is located in the machine room. There are exhaust outlets in each toilet and each dressing booth, a total of ten, each 8 in. by 8 in., discharging 100 cu. ft. per minute, and a larger outlet is in the machine room. The exhaust duct is between the roof slab and a suspended ceiling. The fan discharges into a 14 in. by 24 in. concrete trench under the floor to a small areaway outside the building. No air intake is provided, as there are two windows in each dressing room which can be opened. Light outlets and fixtures are supplied wherever needed in the dressing and machine rooms.

Venting was an unusual problem in this installation,



Above is a view of one corner of the women's dressing room

since the risers could not be brought up directly and left exposed in the garden area at the north end of the pool. This difficulty was finally solved by running all vent stacks and soil pipes into a 4 in. iron pipe, carrying the gas heater stack into an 8 in. iron pipe, and running these to a garden wall about eight feet high. The iron pipe rise in this wall, which is built of rough faced limestone, to a cut stone coping. Sheet lead flashing was provided between the wall proper and the coping stone around the iron pipes and this flashing was locked into the hubs of the pipes with locking rings.

Samuel A. Marx, architect, made the general layout for the entire estate and designed the buildings and accessory features. The mechanical layout for the pool and bath house was made by Arthur W. Nelson, a consulting mechanical engineer with extensive experience in swimming pool work. The plumbing work was done by the Jacob G. Weber Co. of Chicago.

Careful study and planning of this project has resulted in adding interest and attractiveness to the grounds, and overcoming all obstacles arising from the unusual design. Their safety is assured by sparkling pure water, which is not found at the beach, and the equipment is operated without skilled attendants.

What Does Air Conditioning Include?

This outline is based on the definition that air conditioning is the simultaneous control of (1) temperature; (2) moisture content; (3) movement; (4) distribution and (5) cleanliness of air within a very definite enclosure

WE HAVE made a survey of the field and have developed the following outline to show just what air conditioning includes.

Each operation listed can be performed in the home and small structure with equipment now available on the market. This gives a bird's-eye view of the field of air conditioning in the present stage of its development for the practical application to home and small structure demands.

1. Temperature
   - A. Heating
     - a. Steam
     - b. Hot water
     - c. Vapor
     - d. Vacuum

     } Direct and indirect
   - B. Cooling
     - **a. Ice and well water**
       - 1a. Complete portable unit in room cooled
       - **2a. Stationary unit in room cooled or in basement duct-work with cooling tank and ice in basement.**
         - a1. Water spray
         - **b1. Cooling coils**
         - c1. Unit cooler
     - b. Mechanical or vacuum refrigeration
       - 1a. Entire unit in cabinet in room
       - 2a. Cooling unit in room or duct-work with refrigerator in basement or adjacent closet
         - a1. Expansion cooling unit
         - b1. Cooling unit supplied with brine or cold water
     - **c. Blower**
       - **1a. Blower in basement to recirculate air through duct-work or to draw in cool outside air**
       - 2a. Blower in attic to exhaust inside air and draw in cool outside air through windows
     - d. Cooling by humidification or evaporation
       - 1a. Water spray
2. **Moisture Content**
   - **A. Dehumidification**
     - **a. Condensation**
       - 1a. Cold water spray
       - **2a.** Unit coolers or **coils**
     - b. Adsorption
       - 1a. Beds of adsorptive materials
   - B. Humidification
     - a. Evaporation
       - 1a. Radiator pans
         - a1. Evaporation from water surface
         - b1. Evaporation from cloth or paper
       - 2a. Evaporating radiators
       - 3a. Sprays
         - a1. In cabinets in rooms humidified
         - b1. In duct-work
       - 4a. Evaporating pans in duct-work
       - 5a. Table units heated electrically
       - 6a. Steam discharged into room
3. **Air Cleaning**
   - **A. Filters**
     - **a. Renewable**
     - b. Cleanable
   - B. Sprays
4. Distribution and air movement
   - A. Duct-work
     - a. Supply and return system
     - b. Supply system only
   - B. Individual room units
5. Odors
   - A. Ozonizing units
     - a. Table type
     - b. Type installed in ducts
   - **B. Ventilating System, using outside air**

In effect, this outline is the introduction and basis of a series of articles, the first of which appears beginning on the next page. The outline gives a general and comprehensive survey of what air conditioning is and how it is accomplished. The next article, and succeeding ones in later issues, will supply you with design and installation information taken from actual jobs. These specific air conditioning installations have been selected to illustrate the different types of systems available and what features must be taken into consideration with each.

That part of the foregoing outline which is printed in bold-faced type refers to equipment and processes which are included in the air conditioning installation described in the article on the next page.

By G. B. HELMRICH

Ice—Design, Installation and Operation of Home Cooling Job

Complete Working Data Given on One Phase of Air Conditioning

TO AID in promoting the idea of comfort-cooling for the home during the summer season and also to obtain information on air conditioning which will enable us to advise our customers on this subject, The Detroit Edison Company has installed and is testing and operating an air conditioning system in a home located in Birmingham, Mich. This particular home was chosen because in many respects it is quite representative of a class of moderate priced homes whose owners can reasonably be expected to be financially able and willing to make an investment of a few hundred dollars in an air conditioning system that will make their homes more comfortable and healthful during the summer months.

This residence is a two and one-half story colonial type frame structure, 46 ft. across the front by 26 ft. deep with a ground floor area of about 1100 sq. ft. and with four rooms each on the first and second floors and one on the third, making nine rooms in all. The third floor room is heated in the winter time but only the first two floors will be cooled so that the space to be cooled has a volume of about 17,000 cu. ft. The exterior walls are built up of stained shingle siding, three-ply water proof building paper, pine sheathing, studs, lath and plaster with quilt insulation nailed in between the studs. This construction makes a well insulated house, the coefficient of heat transfer being of the order of 0.13 Btu. per sq. ft. and the heat loss for a 70 degree differential is about 100,000 Btu. per hour. The house is equipped with a well designed forced air heating system, heat being supplied by an oil burner. Each room is connected to the cold air return which makes it possible to maintain a positive circulation of air throughout the house. Such a system is well adapted to use for cooling purposes since in general the only additional equipment required is a set of cooling coils, a cold water pump and equipment for refrigerating the water. In this particular installation it was found advisable to replace the existing propeller type fan with a new fan of the centrifugal multi-blade type since the latter has the capacity to overcome the friction loss of air flowing across cooling coils and can handle large quantities of air very quietly, conditions which cannot be met by a propeller or disc type fan. In cases where the existing fan is of the centrifugal type no change need be made in the fan equipment other than possibly speeding it up to increase the air flow and thereby increase the number of air changes in the home to possibly six or seven per hour.

ARRANGEMENT OF EQUIPMENT

Also, in certain instances, some alterations to the return air chamber may be necessary to accommodate the cooling coils but these need be only minor in character so that the air for cooling the home is circulated through the same duct system as is used for heating in the winter season.

Fig. 3 shows the arrangement of ducts, dampers and equipment. A re-circulation damper is provided at the top of the return air chamber and is cross connected

Fig. 1—This is the Michigan home which was selected as representative and in which cooling equipment using ice is installed and operated

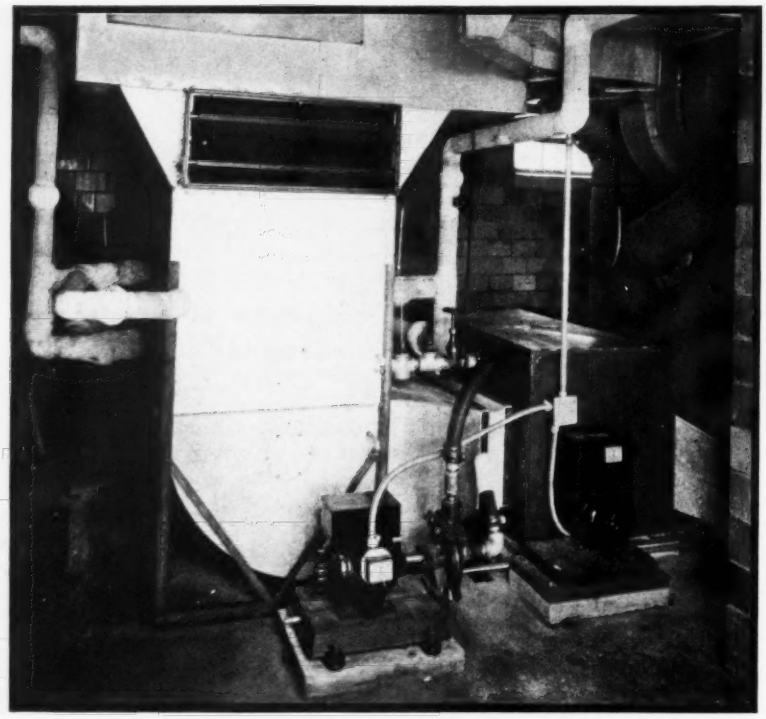


Fig. 2—View of assembled equipment installed in basement. The different items and lines may be identified by referring to the next page containing the schematic isometric perspective drawing

with a damper opening into the basement so that air may be drawn from the upper rooms with this damper open or by closing this damper the basement damper is automatically opened and air may be drawn across the basement from an open window or down the basement stair if desired. A small fresh air duct, part of the original installation, also connects to the chamber above the recirculation damper and can be used to supply make-up air if desired. Below this damper is placed a three-unit air filter, a dry type of filter employing filter sheets made up of several layers of gauzy cellulose tissue and easily renewable by simply pulling out the filter frames and inserting new sheets of filter paper. Below the filter is shown the cooling coil which is installed in two units, an upper and a lower coil and between the coil housing and the heating unit is placed the centrifugal fan and its driving motor. Set beside the fan motor is shown a motor driven cold water pump for supplying ice water to the cooling coils.

THE COOLING COILS

The cooling coils consist of sections of radiators of the vertical flat tube horizontal fin type. In this particular case they were installed in a horizontal plane.

As previously mentioned the cooling coil surface is installed in two units so that the upper unit, which has twice the surface of the lower unit, may be supplied with city well water to pre-cool the air while the lower unit is supplied with ice water by the water pump and the piping is so arranged that ice water may be supplied to both coils in extremely hot weather, the water flowing from the lower to the upper coil while the return air flows downward, thus taking advantage of the principle of counter flow. The combined heat transfer surface of the two units is 492 sq. ft.

The fan is a two-wheel centrifugal type, driven by a one-half h.p. capacitor motor by means of a rubber "V" belt, the fan speed being about one-quarter of the motor speed. The motor driven water pumping unit (rated at 10 g.p.m.) is the centrifugal type with the pump impeller mounted on the extended shaft of a one-half h.p. ball bearing capacitor type motor. To insure quietness of operation, the fan is set on strips of soft rubber and the inlet and discharge are connected to the duck work with canvas, while the motor is mounted on a cork base. The water pump and motor are mounted on rubber discs with rubber washers under the heads of the holding down bolts and, as previously mentioned, both fan and pump motors are of the capacitor type, a type of motor particularly free from electrical noises and thus well suited to installation in a home.

Fig. 3 also shows the location of the ice melting tank with reference to the house and from Fig. 4 it can be seen that the opening to the tank for charging with ice is conveniently located beside the driveway so that the tank can be iced directly from the ice truck. The tank is a standard 500 gallon fuel oil tank, 67 in. long by 48 in. in diameter with an 18-inch square charging chute welded to it. Allowing 40 per cent for voids, it will hold about 2,000 lb. of ice partially submerged.

THE ICE MELTING PROVISIONS

The pump suction is taken off through a 2½-in. combination suction and drain brought through the basement wall about one foot above the floor. The 2½-in. line drains to the sewer so that the tank can be flushed out. It also serves as an overflow line. The balance of the pump suction line is reduced to 1¼-in.

The discharge from the cooling coils is piped through the basement wall near the ceiling and enters the top of the tank. The water level in the ice melting tank can be adjusted closely enough to prevent overflowing of the tank by opening the drain valve and drawing off some of the water about every other day. All cold water lines were covered with one inch of wool felt insulation but the tank was simply set in the ground as it arrived from the shop with no insulation applied to it. However, about 10 in. of pebbles was backfilled around the tank to keep the surface dry and thus take full advantage of the insulating value of the earth. The cover to the ice chute is self-locking with a flush mounted lock and a removable grating is placed inside the chute

about 15 in. down to give protection against the possibility of children falling into the tank.

In the type of system described above, cooling may be accomplished in any one of several ways, depending upon temperature and humidity conditions. The fan alone may be operated and the air pulled down the return ducts, through the filter, and thence discharged back into the rooms through the same supply ducts that carry warm air during the heating season. Although the dry bulb temperature is not affected, the air is introduced into the rooms at about twice the velocity (about 400 ft. per min.) used in the heating season and this air movement makes the human body feel somewhat cooler and more comfortable (fan capacity is 1800 cu. ft. per min. which produces 6 air changes per hour).

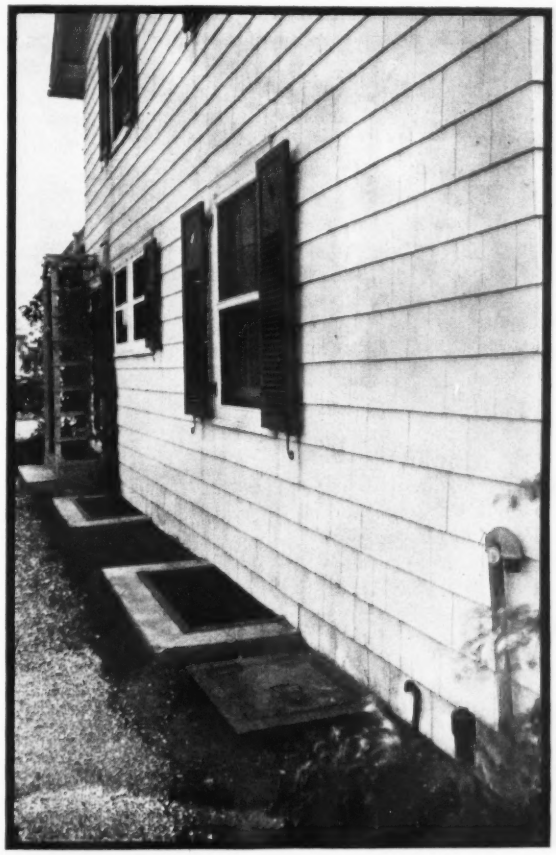


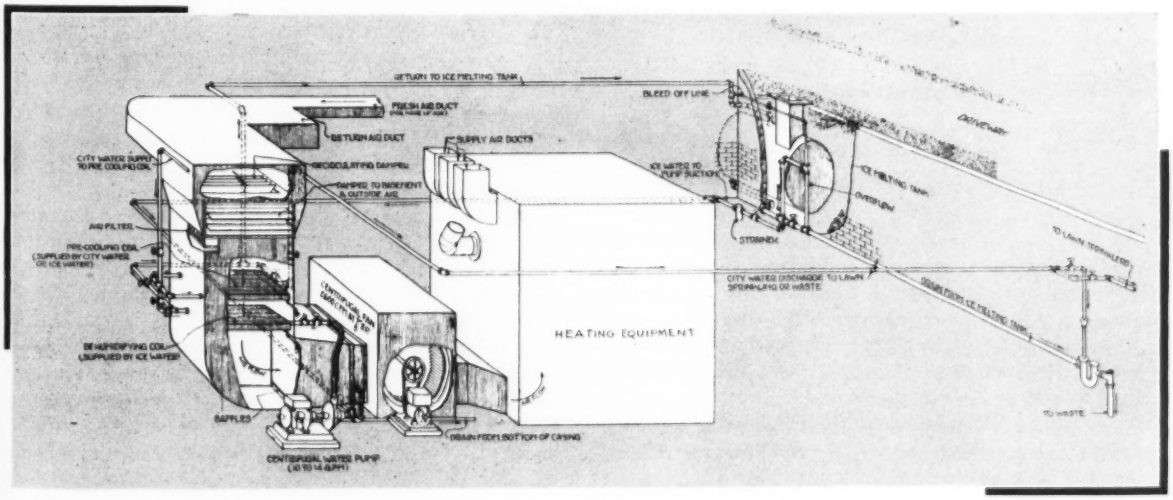
Fig. 4—The metal covered opening in the foreground is the ice feeding door for charging the tank. Being outside, it is convenient for loading

COOLING BY BLOWER

By opening basement damper (thus automatically closing the recirculation damper) air may be drawn in through an open basement window, filtered and delivered to the supply ducts and there are many days during the cooling season when the early morning air and more frequently the evening air is cool enough to produce comfortable temperatures within the home without the use of the cooling coils. The economy to be derived from utilizing the cooling power of night air has been well demonstrated by the first month's operation of this system. Our experience to date indicates that cooling by the use of ice will seldom be necessary after seven to eight o'clock in the evening since by that time the outdoor air is usually cool enough to be drawn through the basement and discharged into the rooms (the bedroom windows being opened at this time), resulting in very comfortable temperatures. Experience indicates that in this method of operation the cooling effect of the basement itself is very appreciable. Similar results have been obtained during several day-time periods, all of which serve to indicate that using the fan to circulate cooler outdoor air will very appreciably reduce the cost of operation of the cooling system. The fan is controlled by a switch so designed that it may be left running after the occupants retire and it will automatically shut itself down at any hour it is set for.

From about noon time to sunset there will be many days when the effect of the sun will so raise the indoor

Fig. 3 — This isometric drawing shows the complete layout of the equipment installed. Photographic views of parts of it are shown in Figs. 2 and 4 on these pages



temperatures that some means of reducing the sensible heat in the air must be employed, preferably accompanied by an appreciable degree of dehumidification, and it is felt that tests may show that dehumidification alone, with only a moderate reduction in dry bulb temperature will be all that is required on many occasions to produce comfort. To accomplish this the ice melting tank will be charged with ice and the ice water pump operated to circulate cold water through the coils. The extent to which dehumidification is accomplished can be controlled by the setting of a proportioning damper designed to permit only a portion of the air to flow through the lower or dehumidifying coil. The temperature of the rooms is controlled automatically by a thermostat set in the dining room and connected so as to start and stop the ice water pump as temperatures fluctuate, this being the only automatic device in the installation. Thus far our experience indicates the assumption that cooling by the use of ice would not be required until about noon time is substantially correct, as in only one instance was the ice water pump started before twelve o'clock.

Preliminary tests have indicated that admitting air through registers installed in the walls at the floor line gives rise to a problem of objectionable drafts in some rooms when the air is introduced below 70 deg. Fahr. in temperature and at velocities approximating 400 ft. per min. some sort of baffle or louvre will have to be installed to direct the air upward. On a recent day when the maximum outdoor temperature reached 95 deg. Fahr. over a three-hour period the home was effectively cooled by introducing air at a temperature of 62 deg. Fahr. at the registers. As to the varying air conditions that can be maintained in the home, only operating experience will determine, but design calculations indicate that relative humidities as low as 35 per cent can be maintained with a dry bulb temperature of 85 deg. Fahr. or 40 per cent with a dry bulb of 80 deg. Fahr.

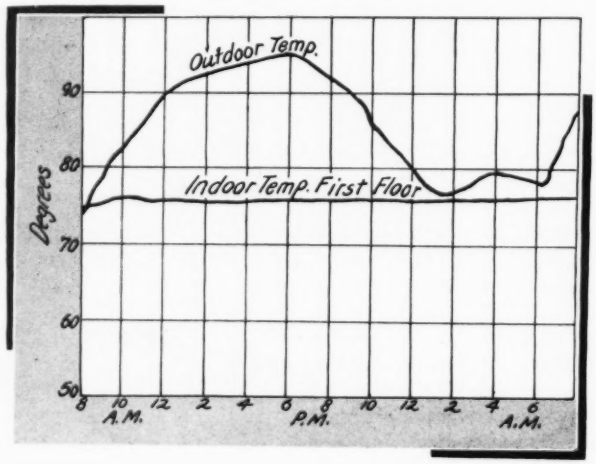


Fig. 5—Here are temperatures for 24 hours on a hot day. The curve shows the ultimate possibilities of the system but it is not intended to operate normally with such high temperature differentials as those shown

EFFECT OF SUN'S RAYS

Since the heat effect of the sun's rays accounts for about 50 per cent of the cooling load the windows are provided with either awnings or blinds and the elimination of this sun effect on the windows reduces the cooling load by the equivalent of nearly two tons in the rate of refrigeration required. The use of awnings or blinds is very essential if cooling loads are to be kept within economically reasonable limits.

The maximum cooling requirements were computed on the basis of an outdoor dry bulb temperature of 95 deg. Fahr. wet bulb temperature 79 deg. Fahr. corresponding to a relative humidity of 50 per cent with indoor conditions of 80 deg. Fahr. dry bulb, 67 deg. Fahr. wet bulb and 50 per cent relative humidity. In computing the amount of heat to be removed from the house under the above conditions a number of factors were considered.

CALCULATING THE LOAD

The factors considered are sun effect on windows, walls and roof, heat transfer through walls due to air temperature difference, gain of sensible heat by infiltration of air, dehumidifying load due to air infiltration and body moisture, heat from the human body and heat from cooking processes. With blinds or awnings used this cooling load is equivalent to a maximum rate of refrigeration of four tons (a ton of refrigeration is equivalent to the melting of about 74 lb. of ice per hour), and averaging this load over a maximum cooling day the heat to be removed is equivalent to a rate of refrigeration of three tons. To remove heat at this rate ice must be melted at the rate of about 218 lb. per hr., or 1,744 lb. per day for an eight-hour cooling day. The average cooling load for the thirty days during the summer that cooling by refrigeration is assumed to be required is at a rate of slightly over two tons of refrigeration, requiring the melting of ice at the rate of 156 lb. per hr., or 1,248 lb. per day. With an allowance for stand-by and radiation losses the total season's ice requirements may approximate 20 tons, but since so many variable factors are involved in estimating a cooling load and so little experimental data is available, an accurate determination of the quantity of ice required will need to await the results of actual operation. In this installation it is interesting to note that the estimated ice consumption in tons is about one third more than the coal consumption would be for heating.

Although our tests indicate that cooling by the use of city water is fairly effective during the early part of the cooling season it should be borne in mind that in most localities, especially in the larger communities, the city water rises to a temperature approximating 70 deg. Fahr. during the hottest part of the season when cooling is most needed and under such conditions, if water is to be used, it must be refrigerated by some means.

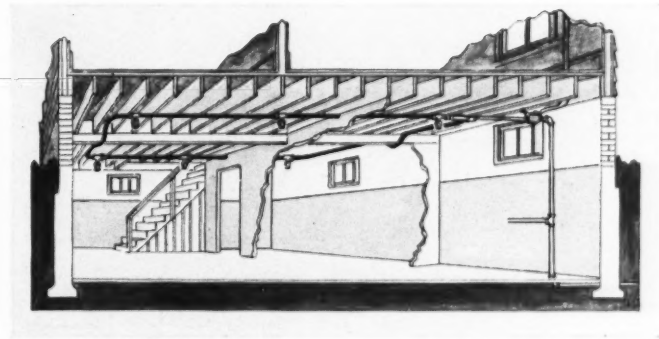
It is assumed that the fan will operate about 16 hours per day on cooling days and 45 days per cooling season or 720 hours and the water pump will average 8 hours

per day for 30 days or 240 hours per season. Estimating the power consumption at ¼ kw. for the fan (recent operating data has confirmed this figure) and 1/5 kw. for the pump the season's power consumption will be about 228 kw-hr. and the ice consumption or cost of refrigeration expressed in terms of power supplied to a refrigerating machine located on the premises is about 600 kw-hr., resulting in a total equivalent power consumption of approximately 850 kw-hr. per season.

The system as described in this article can be installed for a cost of about $800.00 but if a suitable fan and filter are already installed and ice water only is used and necessary alterations to existing duct work are only small the installation cost might be as low as $500.00.

Depending upon the extent to which cooling by outdoor air is resorted to and also upon the cost of ice and summer weather conditions it has been figured that for this job the operating cost will vary from a minimum of about $60.00 per season to a maximum of about $90.00 (based on ice costing $5.00 per ton).

New Field is Opened to Piping Contractor



This drawing shows the basement of a residence and the manner in which the fire protection sprinkler system is installed with tubing

IN THE past, the expense connected with automatic sprinkler systems for fire protection has made them prohibitive for installations in homes and small shops. The field has been closed to the plumbing and heating contractor. Now, however, a new fire protection system has been placed on the market which has been designed especially for the home and small shop requirements. The cost of the system is surprisingly low. It is simple, easily installed, and in the case of residences, it is confined to the basement.

HOW SYSTEM IS INSTALLED

As indicated by the drawing above, the system is installed in the form of a loop. This is of copper tubing. At regular intervals, sprinkler heads are located in this line. Each of these is held shut tightly by a special bulb designed to open only when subjected to a temperature of 135 deg. Fahr. When a bulb opens, water issues from the tubing and is broken into a pressure driven spray. An automatic alarm also is included in the system so that as soon as the water flows through the tubing to an open head, an electric bell alarm is sounded. As illustrated, the alarm is placed in the circuit between the domestic water supply and the sprinkler loop. The sprinkler heads are installed hanging down at 10- to 12-ft. intervals. Hanging in this manner facilitates the installation by permitting the tubing to be attached directly to the ceiling by means of clip hangers. The tubing is provided in 12-ft. lengths. At one end of each length, a sprinkler fitting is permanently attached. The fitting carries a tubing union and a threaded outlet to receive the head. As for the alarm valve, this is a combination gate, check and alarm device. Ordinarily, the check in the valve is closed in the water way. When a head opens, the rush of water moves the check out of the way and this establishes an electrical contact which rings the alarm bell. The stem of the gate valve is marked so that there can be no question in opening it.

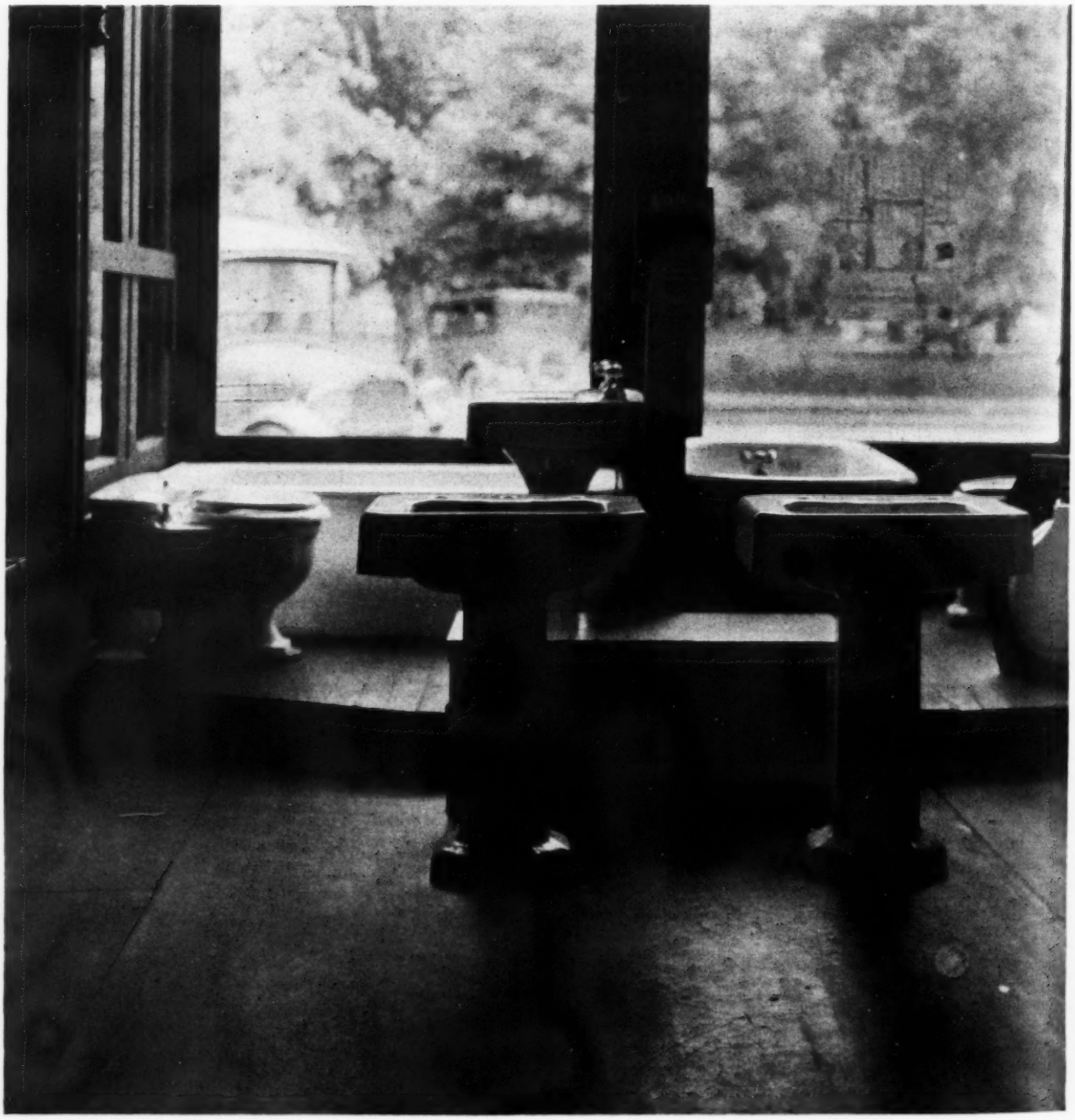
THE FIELD INCLUDED

The field for this extends to include old homes as well as new ones. Records show that most residential fires have their origin in the basement. Therefore, the installation of the system has been confined to the basement section. However, the residential field is not the only market for the plumbing and heating contractor, who takes up this new work, to engage in. The system is equally applicable to the basements of small stores, shops and the storage rooms in back of such establishments.

Grinnell Company with executive offices in Providence, R. I., is the manufacturer.

Remodeling Continues To Be Contractor's Best Opportunity

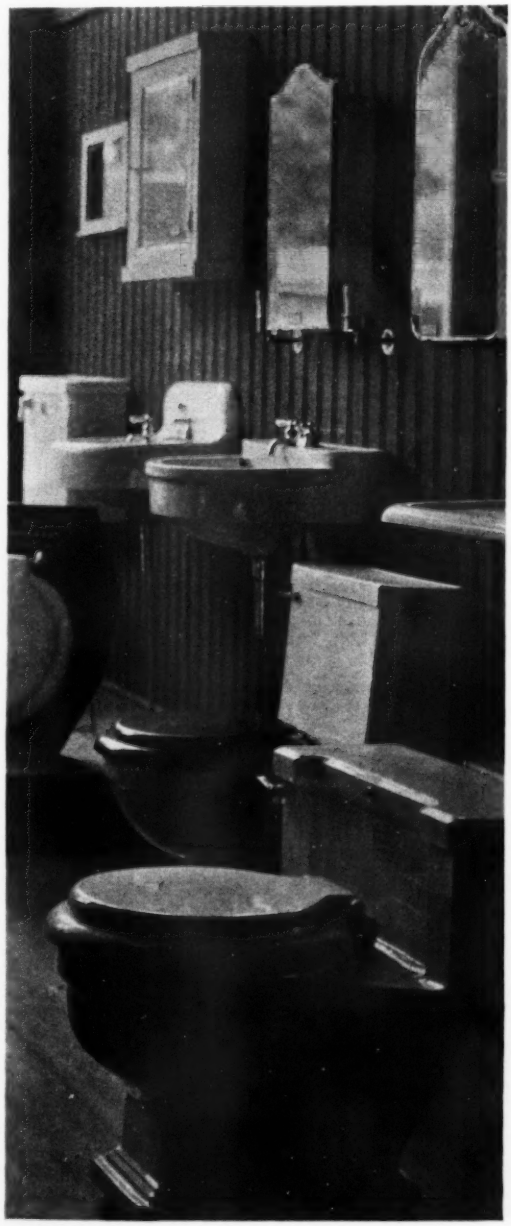
Recent examples prove that remodeling jobs can be sold — now; and a review of some of the successful ideas which dealers have used to secure this type of business



IN 1927, new building totals were still so large as to be overwhelmingly impressive. We were talking about six billion dollar years, and it seemed that there could never be an end to those great totals.

But it is the job of the business paper to keep eyes and ears open, and to get back of what may be deceptive indications on the surface of things. DOMESTIC ENGINEERING, with its many field contacts, was alert to what was happening. From every corner of the country came reports. The details might differ—but essentially the reports were the same. Something was wrong with this great volume of new business. As a matter of fact, two things were wrong with it. First, it was already shrinking—the totals for each year had begun to sink in 1925; second, this new work was not being had, in a great many cases, at a profit. This latter condition showed up in our reports from the field. And our own sources of information told us that the great building boom was spent—that it had crossed its peak and was on the downward path.

We studied the situation, as it affected our readers—the plumbing and heating contractors. Competition was making it impossible for the contractor in many instances to take a new job with any hope for a profit. On the other hand, these same contractors had gone all the way in trying to get new work during the earlier stages of the boom, to the extent of completely neglecting repair and jobbing work. Some of them actually turned this type of work away.



View of the main store of a firm that is accurately directing selling efforts. Note use of "Now-Better Plumbing at Lower Prices" Sales Help from June issue of Domestic Engineering

NEW SELLING DIRECTION

Yet it was obvious to us, for the two reasons cited, that repair and remodeling work was to assume an important place in the total volume of the plumbing and heating contractor's business. That was in 1927, mind you, when the stock market boom had still two years to go, and almost no one was conscious of the fact that building totals were seeking more rational levels.

So, with the very outset of the "Plumbing and Heating Merchandising" section, which was founded early in 1927, we began to hammer away at the remodeling idea, urging our readers to study their communities and to go about the selling job of picking up this type of work. It was non-competitive. A man sold the home owner or apartment owner on the need for up-to-date plumbing and heating equipment; in most instances, because he had created the job he got it at his own figure.

Ultimately, of course, the fact of falling volumes of new work began to be plain to everybody. In greater and greater numbers each year since then, men have turned to the field of repairs and rmodeling for their business. One contractor who was doing around $175,000 in new work at the peak of the boom, saw the light early enough, and started out to build up a remodeling business. As his new work sank, his remodeling work grew. Starting with $19,000 in his first year of effort for this type of job, it doubled itself for the first three years. He liked it. It was profitable work. He sold merchandise at a profit.

That leads us to the present moment—to conditions that we must face frankly, but with no thought of giving up the ship. And it isn't a time when silly optimism is going to help us. Every retailer in our field—and in most others—faces the same conditions. The significant thing is that some of them are facing it—with their eyes open. We don't intend to paint a rosy picture, and we

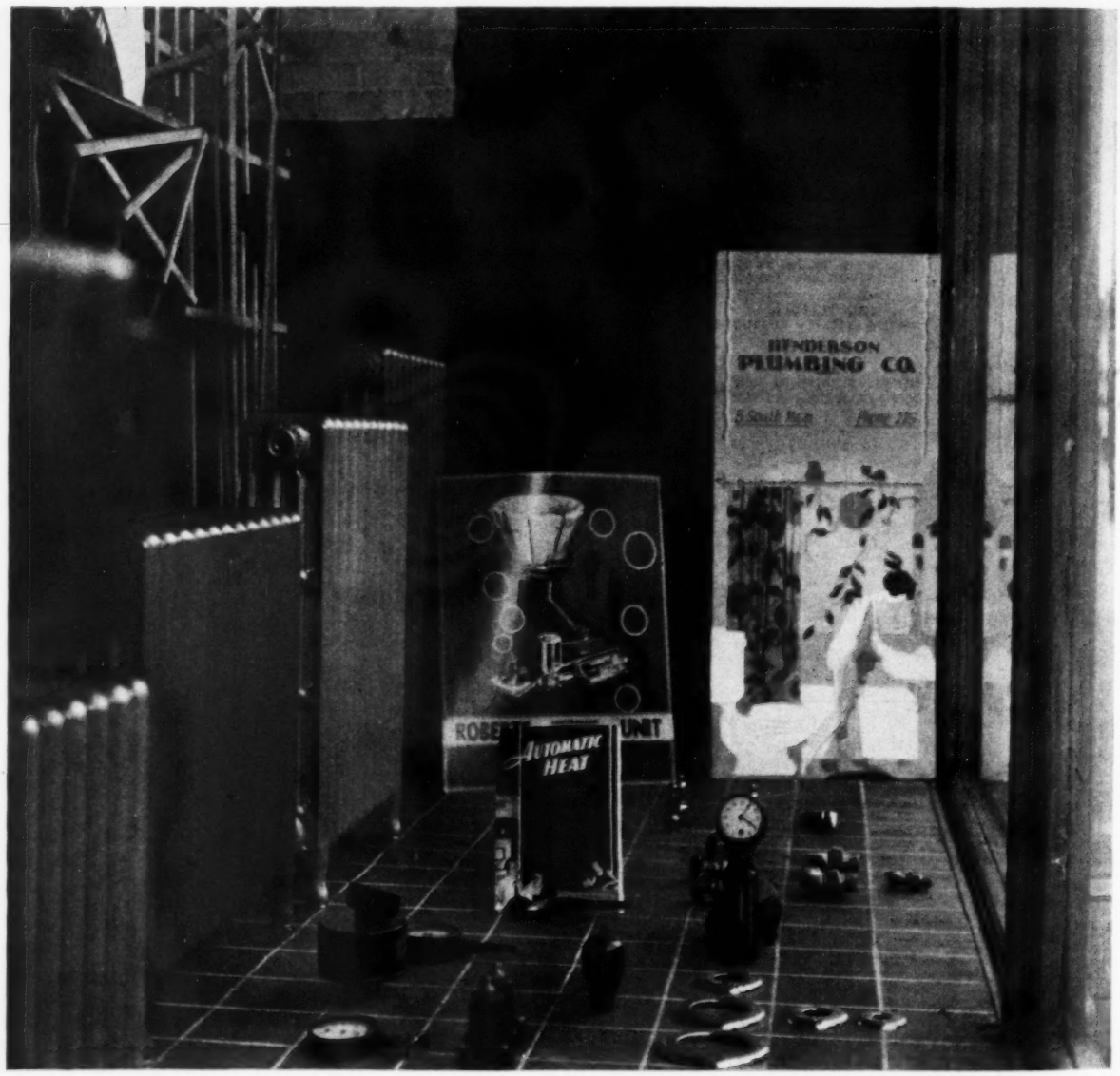
don't say that those retailers who are facing conditions with eyes open are becoming millionaires over night. But they are staying in business and, instead of spending their time talking about how bad things are, they are at work trying to make them a little better in their own cases.

GETTING BUSINESS—NOW

Right at the start it may be admitted that it requires a little thinking. It is difficult for the man who, in the past, has been so well established that he had no particular difficulty in keeping his men busy, to square himself away in front of his desk—perhaps long after the end of the business day has come—for the purpose of figuring a way to get some additional work. But if he will wipe away the desire to compare his volume today with what it was when the country was sailing along at a speed that was bound to bring about a crash, he can secure for himself the satisfaction of doing as good a job as times permit.

In accordance with the long-established policy of DOMESTIC ENGINEERING, we don't ask you to accept merely a statement of the case without evidence to prove that what we challenge our readers to do is already being done by some of them. Down in Henderson, Kentucky, G. L. Norcutt conducts a business known as the Henderson Plumbing Co. We reproduce pictures of his main show room, and the heating show room in another store space they are using to drum up business. Mr. Norcutt says: "If Marshall Field & Company, The Fair, John Wanamaker and other merchants find it pays big returns to have attractive show windows, perhaps our industry might well look to such precedents for suggestions."

No doubt things in Henderson, Ky., are on a par with



This is a window display maintained by the firm whose main store is shown on preceding page. The window above is for their heating show room. Another Domestic Engineering Sales Help from June issue is in the foreground.

Every house on this street has a safety boiler feeder. Has every house on your street one?

conditions in any other city or town in the country. The difference is that men like Mr. Norcutt are doing their best to change those conditions, in so far as their own businesses are concerned, and are succeeding. "We might advise," writes Mr. Norcott, "that we are preparing an aggressive sales campaign on both plumbing and heating at this time and so far, in the last six weeks, we have sold approximately ten thousand feet of radiation and four boilers, in addition to about thirty-six fixtures."

Perhaps Mr. Henderson has never heard of the "summer slump"; and he seems to be perfectly capable of ignoring the conditions which have so many men in a state of immovable pessimism. He is, one may assume, working on his problem with the fact in mind that, even with business off one-third, there will be sixty-five billions of dollars spent in this country this year. There was a time in our national history when that total for the year would have seemed colossal. What's gone wrong with our thinking, seeing that we have arrived at a state of mind where sixty-five billions gives us something to groan about?

Men like Mr. Norcutt know that some people have money, and have needs, and that a sufficient number of the needs and the dollars are owned by the same people. These alert merchandisers go after that type of prospect —and get business.

Let's hop up into Michigan. Everybody knows that in Michigan automobile money is an important factor; as well as the money that comes from iron ore, copper and forest products. Moersch & Degnan of Escanaba, Mich., are located in this latter country and as to general business there, James Degnan writes: "You know the rest of the story." So does Mr. Degnan's firm "know the rest of the story." But they seem to have discovered the trick of putting a happy ending to it.

Some months back Mr. Degnan indicated that they were working on a very interesting sales "stunt" and that it looked as if it were going to be quite successful. So we watched. You know, in the first place, that only a few months back we were able to carry a story that caused a positive sensation, because Moersch & Degnan had taken up the gauntlet of "competitive merchandising" and were giving the direct mail and other direct-to-you outlets a battle, with the gloves off. The "stunt" they referred to was completed, and now the story may be told, in Mr. Degnan's own words:

"We discovered a marked shortage of good air valves and quick vents on nearly every one-pipe steam job of the old type in Escanaba, which consequently resulted in improper distribution of steam, very little air relief, higher steam pressure than necessary and higher fuel bills.

THEY GOT BUSINESS

"In spite of the fact that the heating season had been well advanced, which encouraged most of our prospects to wait until next fall, we succeeded in selling 28 installations in two weeks for a total of $644.

"Our enthusiasm does not come from the number of jobs sold, but from the results obtained in the working condition of these plants. It is indeed remarkable to find an old steam job with old air valves, some without any vents on the mains and others with 35c air valves venting the mains, and to equip these installations with the latest type air valves.

"Imagine an owner's surprise when he finds that he can heat every radiator in his building without an indication of steam pressure on the gauge, where previous to installing proper relief it was necessary to maintain from 5 pounds to 14 pounds.

"All of these sales were made by appealing to the prospects' natural tendency to cut down their heating cost, which now more than ever before every one is trying to do. With a good air valve, and our knowledge that most of the plants did not have any air relief on their mains, we contacted the owner in person, with an appeal to cut down expense."

One more example, before we get on with the review

which is the principal purpose of this article. We show a street on Long Island. Every house on this street has been equipped with safety boiler feeders. Incidentally, all of them are oil heated.

The purpose of commencing this article with these examples is this: We may admit the difficulty of the conditions under which we have to work; we may know of a great many people who haven't any money—or say they haven't; we may point to factories that have been closed.

Dear Apartment Manager:

The time of the year is drawing near when an abundant supply of hot water will be in great demand, when your tenant will want and use hot water all hours of the day and night, more than any other time of the year.

Will your present hot water heater stand this strain? Is it efficient? Is it a great gas consumer? Do you have plenty of hot water?

We would like to tell you about the ——— Automatic Storage System, the oldest instantaneous and automatic hot water heater system on the market. We have been the agent of the ——— here in Tulsa fourteen years and during that time have installed several hundred systems, all are still in use and give perfect satisfaction.

We carry a full line of ——— heaters on our show room floor. We would be pleased to have you call and look them over.

Inclosed find pamphlet describing Storage System.

Yours truly,

Modern plumbing, according to real estate men, means better rental income. This is an actual letter based on this knowledge

But do these things mean that we may sit back and do nothing but complain? Is there any slightest use of trying to find a way out?

The examples cited above, which can be multiplied all over the country, show that not only is there some use in trying to find a way out, but that there is actually a way out. There are homes where there is money to be spent. The job of the retailer is to locate and contact those homes, or businesses, where there is money to be spent.

We might cite the case here of a contractor who figured that, right after Easter, florists would have a great deal of money on hand, because Easter is the biggest flower day of the year. Acting on this idea they sold boilers to local greenhouses. That's the kind of thinking that turns the trick. It's one thing to face hard times and moan about them; it's another thing to face them and do something about it.

Because it can be done—because there are sales possibilities which may be tapped by the alert plumbing and heating dealer, we are going on with this review of what such men have been doing in the past to develop remodeling work. We believe the ideas they have followed will still work. It is necessary to narrow the application of those ideas, perhaps—to study the community in order to direct the sales effort more accurately, but with such accurate direction the contractor will find it possible to develop jobs.

REVIEWING SUCCESSFUL PLANS

What plumbing and heating contractors have done to produce remodeling jobs ranges all the way from a small mailing campaign, to the process of buying an old-fashioned building, remodeling it, renting the apartments at a profit, and using the building as an example to other property owners as to just how valuable such remodeling can be to the owner of rental property. They extend from a consistent effort to secure repair and remodeling work, to the sale of specialties that will bring the heating plant up to date.

One further fact that is in the favor of the plumbing and heating retailer is that in a great many cities and towns in the United States campaigns have been and are now being conducted to secure pledges from home owners to have repair and remodeling work done. Just what the dealer in our field reaps from these campaigns is up to him. He must be prepared to co-operate with the movement, and to follow it up aggressively.

August is a good month for shower sales.

Dear Sir.:

Put grandfather's house on a building lot in any modern community, and the county health officer or the city board of health would condemn it as dangerously insanitary.

Grandfather built the best that he knew alright, but the standards of sanitation and hygiene have move ahead a long distance since grandfather's day.

As a matter of fact, the plumbing and heating equipment that was the best available twenty or even ten years ago, is no longer up to safe standards of sanitation, hygiene and economy. Unless the equipment in your building has kept pace with the march of modern demands, there is serious danger that it may be an unrecognized but wicked menace to the health of your family or the occupants of your building not to mention needless expense.

There is every reason for remedying this state of affairs promptly. By installing modern sanitary plumbing and heating equipment, you will have the satisfaction of knowing that your outfit is practically proof against need for repairs, and that it may be safely relied on for the most valuable service related to health, that is the prevention of disease.

I will be glad to serve you on anything from leaky faucets to a complete new bathroom outfit or heating plant, and you will find that my kind of service is the kind you will be glad to pay for. You are cordially invited to write, 'phone or call in person for prompt attention.

In business for your health and comfort.

A letter on plumbing remodeling that has real "pull". A southern contractor used it

One Pennsylvania contractor showed his appreciation of this, as well as of the fact that to make every cent spent in selling effective, careful study must be given to the effort. He had a list of names that totaled three thousand. After going over it carefully, he reduced it to eighteen hundred names. During one August he made a drive on showers. First he dressed his windows with an attractive display of showers. Then the list was circularized. On this—as in the case of other items which were offered to the same list—it is reported that actual sales resulting from each mailing varied between fifteen and twenty-five. One letter, tied up with a display of gas water heaters, brought fifty sales.

This same contractor knows a sales lead when he sees it. A call was received from a home where the water supply service was unsatisfactory. They looked into the situation and the representative of the firm discovered that home owners in that entire block were complaining of a lack of free flow of water. The remedy was pipe replacement—and a nice volume of such work was developed by writing to all owners in the block.

Here are the arguments which an up-and-coming New Jersey heating contractor has been using to push the idea of modernized basements. In selling automatic heating for older plants he puts over the following points: 20 per cent more household space, does away with a basement which is usually an eye-sore, gives space for playroom for children, increased salability, added value to the home, elimination of dust and dirt, even temperature. He points out to his prospects that the old-fashioned cellar accounts for from 15 to 25 per cent of the cost of the building due to excavating, concreting, supporting posts, beams, stairways, etc., and he feels that the small added cost keeps this 15 to 25 per cent of the investment from being useless.

In homes that are radiator heated, the presence of the radiators in the summer time are a problem to the housewife. In winter she accepts them without question, because they are then performing their task of heating the home. But in summer it's another matter. Radiator cabinets, designed to match any type of room finish or furnshings, have an accepted place in home furnishings. One contractor has found the item profitable enough to pay the rent of his store. Perhaps that would not be possible now—but he is undoubtedly still selling radiator cabinets in greater quantities than the dealer who is exchanging stories with the salesman of how poor business is. Incidentally this contractor makes it an invariable rule to ask, after he has closed a sale, for the names of friends or relatives of his new customer who may want his services. One such sale led him to a relative's house, where he sold a $400 order; and this second sale resulted in a tip, and five miles of travel, where he closed a $300 deal. It isn't the sensational that makes the sales—it's being on the job every minute.

Good copy for this time of year — recalling the inconveniences of last winter. The copy can be used in a letter, on a postal card, in personal conversation

Don't Go Back On Your Cold-Day Promise

Remember your promise as you shivered in half-warmed rooms through that bitterest spell. Don't let your resolution for *real heating comfort* fade with the waning winter. Install Heating Equipment—inexpensive to buy and easy to operate. Convenient payments can be arranged.

EXPOSE YOURSELF TO SALES

These are the arguments he uses in selling radiator cabinets: They make a cozy window seat on low radiators, saves on coal bills, doctor bills and repair bills by preserving heat in the home and by maintaining a healthful humidity. Keeps down cleaning bills.

It is not always easy to tell where sales are coming from. But the contractor-dealer who is submitting himself to the chances of selling something by trying it in logical places is sometimes led to further sales in places he had not thought of. A Chicago contractor bumped into just such a sales opportunity, grasped it—and put in something over $20,000 worth of shower stalls in a group of large lodging houses where men are housed for small sums. Strangely enough, this work led to installations in exclusive country clubs,

(Continued on Page 88)

Is your hot water supply satisfactory?

You can have steaming water always on tap for a hundred needs. Water heaters, coal or gas, are low in price and cost only a few cents a day to operate . . . You can have this equipment installed in your home now at new low prices, with a year to pay.

We Guarantee All Work

This ad talks about hot water—and new low prices — good summer-time copy

By CARL J. KLERMUND

Trouble Shooting In the Small Heating Plant

Experiences described at Midwest Bituminous Coal Conference point way to better service

JUST recently I was called on a complaint where the home owner was having trouble with back smoke, (smoke coming out of the fire door of the boiler). It was a new heating plant and the boiler man and coal man were being blamed. The chimney was constructed of concrete blocks with a 9 inch round flue. There was an offset of about 10 inches which started above the floor of the attic. For some reason the contractor decided that a 6½-in. square tile flue lining would be sufficient above the offset, which was about 4 ft. to the top of the chimney. When I got up on top of the roof and looked down into that flue, I found at least a 1½-in. layer of soot around the sides. This brought the area, or opening down to about 3½ in. In addition to this, a smoke test brought out that the chimney was not smoke tight. It leaked like a sieve at the offset and in the basement. This home owner said he had tried about four or five different kinds of coal in attempting to overcome his trouble. The best coal mined would not correct that trouble.

Chimneys with offsets are usually trouble makers. They have either a collection of soot in them or they leak, thus reducing the draft.

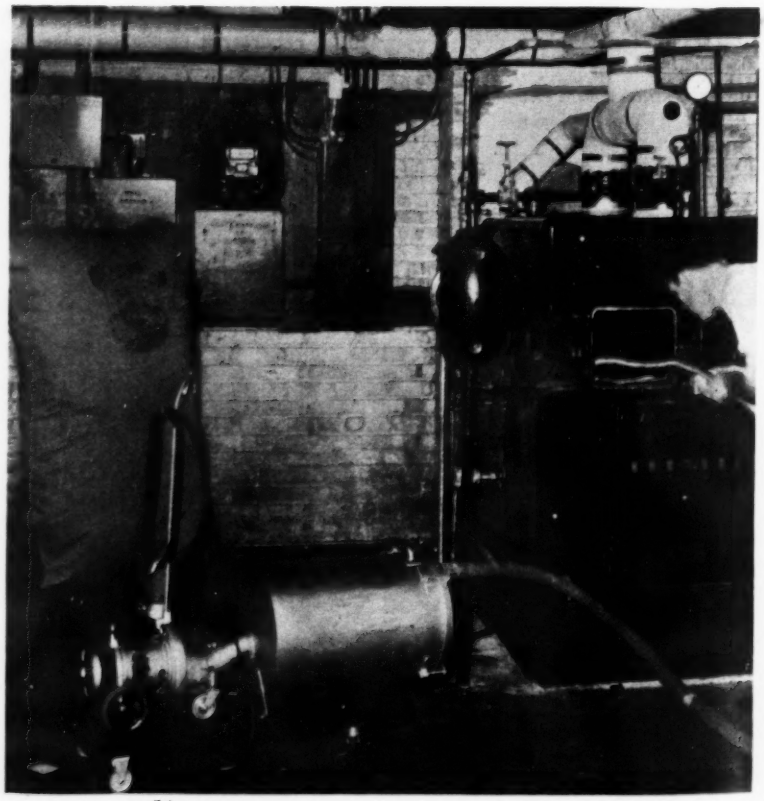
When you get down in the basement you will find most anything. Ask a few questions about how the coal acts in burning, or what the trouble is. You can make an inspection of the coal. If you learn that this is of good quality it should be eliminated from the list of possible difficulties and the inspection should progress to other features.

Lack of heat in some particular room may be the complaint. If it is steam heat, it may be dirty water in the boiler, plugged air vents, air bound lines, or faulty piping. In hot water, it may be poor circulation or not enough water in the system.

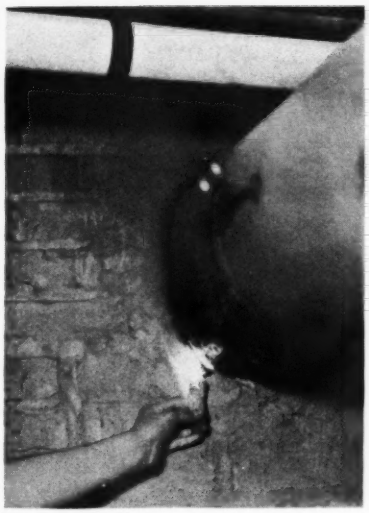
Here are some of the things you may run into that cause poor draft: Two or three vents entering the same flue. I have found as high as four of them. Just imagine a condition of this kind. An 8-in. by 8-in. flue, with an 8-in. smoke pipe from the heater, a 3-in. vent from a gas water heater, a 4-in. vent from an auxiliary heater, and a 6-in. vent from a laundry stove. Try to get draft under conditions of that kind. Remove the vents that don't belong there and you can show what a difference it makes in draft. If you have a draft gauge you can show a difference in the pressure. Here is the Standard Ordinance as recommended by the National Board of Fire Underwriters, Section 1, paragraph 23, page 9.

"There shall be but one connection to a flue irrespective of whether the fuel used be coal, coke, wood, or oil."

Smoke pipes are put up at all different angles, and are not properly joined, or are in such dilapidated con-



Keeping the heating plant clean is one of the major requisites for heating plant efficiency. Portable equipment for a contractor is shown here



At the left is a candle flame being used to detect draft leaks around a chimney and smoke pipe

dition that they are about to fall down. Smoke pipes inserted too far into the flue are very common. This reminds me of an unusual case I handled some time ago. I was greeted by an old gentleman who knew all about boilers and coal, having fired his boiler for some 27 years. He might have known something about cleaning the inside of his boiler, because he told me he put horse manure in it to clean it. I can't vouch that the manure will do the trick, but I do know that he didn't know anything about taking care of the outside of his plant.

He said, "There isn't a thing wrong with the plant, it's the coal, because I had some of the same kind during the war that would not work." I had a very hard time convincing this man it was not the coal. In fact he made a wager of a new hat, he being a hat manufacturer.

HOW TROUBLE WAS FOUND

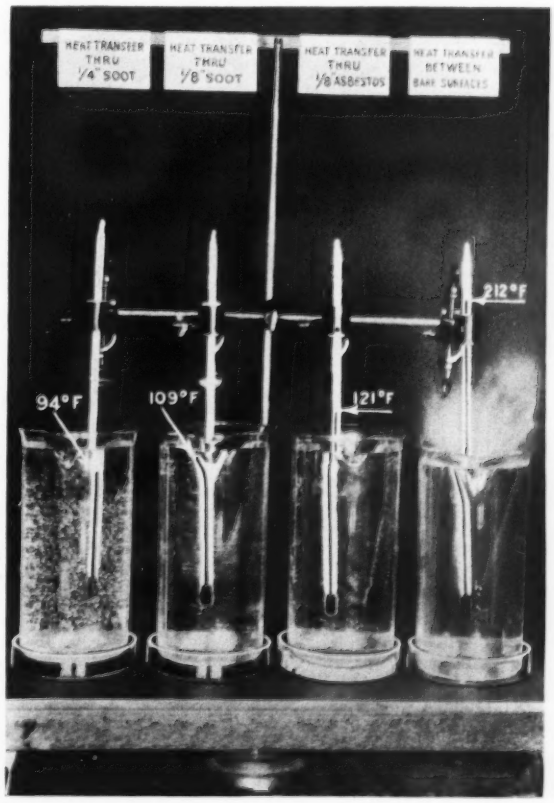
I removed the smoke pipe and found it to be inserted 6 in. too far into the flue. I removed the 6 in., replaced it and cemented some leaks around the pipe which were as large as your fist, and cemented the clean-out door at the base of the chimney, which happened to be a piece of tin that was propped up over the opening. I won the hat and made a very good friend.

It may be necessary for you to remove the smoke pipe in your investigations. Don't be surprised to find a collection of soot and fly-ash in the pipe where it enters the flue, as the average home owner who cleans his heater, may not clean the pipe. While you have the smoke pipe down, insert a mirror in the opening. If it is a straight flue, obstructions will reflect in the mirror. Don't be misled, if it is a tile lined flue, thinking that it is all right even though you see no obstructions. Flue tile are not always put in according to good practice.

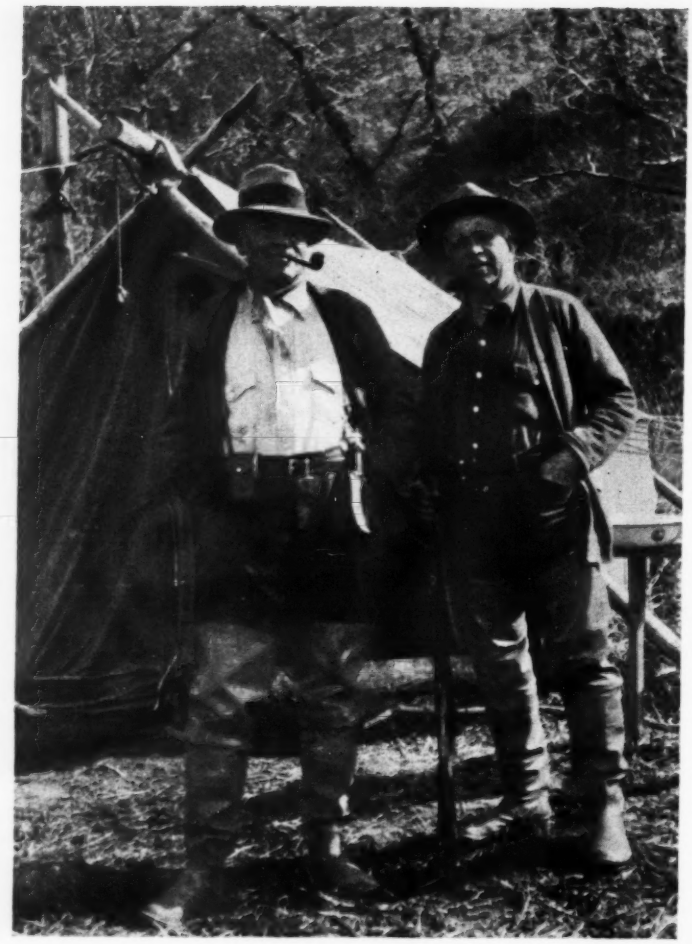
A smoke test will bring out some of these conditions. Connections are not made to fit close enough, or are poorly cemented. Broken or chipped tile are often used. In a double flue lined chimney, there may be no division wall and they may leak from one flue to the other.

Check over the condition of the fuel bed. Too thick a fuel bed or too much fine coal may not permit sufficient oxygen to go through. This may cause smoke or bring about lack of heat. Too thin a fuel bed may permit too much oxygen to go through the fuel bed, reducing the efficiency. I ran into a case where a woman was complaining about not getting enough heat out of the coal and ordered the coal to be taken out. On investigating I found at least three sections of grates in the rear of the boiler that were bare. I explained the cooling effect of the cold air, evened the fuel bed all over the grates, cut down on the air supply and in less than ten minutes had 5 lb. of steam.

In a boiler you may find the combustion chamber and flues so clogged with soot and fly-ash that it is surprising how they are able to get any heat at all. Ashes left to accumulate in the ash pit shut off the intake of air, or do not permit a free distribution of air to all parts of the fuel bed. Ash left to accumulate on the grates, or clinkers may reduce the draft.



This shows the effect of soot on heat transmission. As indicated, each beaker is exposed to the same heat. The differences come in that the one at the left is separated from the hot plate by one-quarter inch of soot while the one at the right has direct contact



Mr. Cornelius, at the left, and a companion are shown in front of their camp on Kodiak Island in Alaska during their recent bear hunt

"They had no more than entered the patch when the head of a second huge bear came up from a brush-concealed hollow only eighteen feet away, literally towering over Mr. Cornelius"

Bear Hunt In Alaska Provides Thrilling Experiences

NO WONDER, L. A. Cornelius, president of the Wolverine Brass Works of Grand Rapids, Mich., is in a contented frame of mind these days. He has just realized one of his great ambitions as a hunter. He has returned from a hunting trip in Alaska with two Brownies, that is, two Kodiak bears, the legal limit allowed visiting hunters under Alaskan game regulations, and the largest bear measured 10 ft. 4 in. from snout to tail before skinning and would probably have weighed between 1,800 and 2,000 lb.

If anybody doubts that that is a lot of bear to be wrapped up in one package he should invade the rugged Alaskan islands that are the native haunts of the Kodiak bears and face these largest flesh-eating animals in the world at close range, says Mr. Cornelius.

Two years ago last spring Mr. Cornelius and a friend Charles F. Powers, also of Grand Rapids, made a trip to the Kodiak territory in quest of the big, brown bears, but a late spring defeated their plans. The Kodiak bears had not yet emerged from their winter dens and the hunters were obliged to content themselves with a hunt for black bears on Chichagof island. They bagged several of these animals but saw no Brownies.

On returning from that trip they laid definite plans to return to Alaska on a Kodiak bear hunt as a climax to their long career as hunters. The result was that they left Seattle April 6 this year by boat and landed on Kodiak island, famed for the size of its Brownies, April 16. Here they camped on Shelikof strait, across from Katmai, a world famed volcano. Their camp was within fifty miles of the great smoking mountain, and not a day passed that they did not see Katmai. With black smoke continually pouring from its snow-capped summit it was one of the most impressive and awe-inspiring sights of the trip, according to Mr. Cornelius.

The Kodiak island is rocky and rugged, with snow-capped mountains rising from 3,000 to 4,000 ft. from the water's edge all along the shores. There is no game

on the island save bear, fox, weasel and ptarmigan.

The Kodiak bears select their winter dens high on these mountain slopes, and on emerging in spring they at once work down below the snow line in quest of grass and roots. It is on these foraging expeditions that the hunters look for them.

The favorite method of hunting is to go out in a small boat or canoe along the shore, for the sake of easy traveling, and scan the mountain slope with powerful glasses until a large bear is spotted. Repeatedly Mr. Cornelius and Mr. Powers fished with good success for cod while they waited for bears to appear.

The animals begin feeding at daybreak and feed steadily until midmorning, when they retire into a dense alder patch or other heavy cover for a noonday siesta. About two hours after noon they emerge on the open slopes and resume feeding.

A TON OF BROWN BEAR

The alder patches are so dense as to make stalking out of the question. To begin with, it would be impossible to work silently through the dense tangle of brush, which is laid flat by the weight of the snow each winter and so forms a heavy mat several feet high. In the next place accurate shooting with a rifle would be impossible under such cover, and finally the Alaskan guides and others familiar with the habits of the huge bears avoid following them into cover if possible. While most of them are not aggressive, occasionally one will turn on the hunters, and a ton of bear, rearing more than 10 ft. high and charging through thick brush, is no inviting prospect.

Mr. Cornelius and Mr. Powers were on Kodiak island thirteen days before either of them succeeded in bagging a bear. This was largely on account of the weather. Rain or sleet fell every day the first twelve days they were on the island.

The first bear bagged by the party fell to Mr. Cornelius' rifle on April 29. The party, including Charles Madsen, head guide, and Alfred Madsen and Jim Walker, two assistant guides, was cruising along the shore of Uganik bay, when Walker spotted a big male Brownie working toward an alder patch, about halfway up a nearby mountain.

Mr. Cornelius and Walker landed and started up in quest of the bear. They found the alder patch much larger than they had supposed, but they finally chose a lookout post and sat down to await developments.

In a few minutes they saw the bear, more than half hidden among the alders, directly below them. To shoot at him in the thick brush would be folly, so they waited for him to move out. After standing motionless, save for a slight turning of his huge head, for a few minutes, the bear finally moved off in the opposite direction. At a distance of about 350 yards he emerged from cover to cross an open snow patch, and Mr. Cornelius' first shot broke his shoulder. Roaring with rage he started off parallel to the hunters, and two more shots put him down to stay.

Before that day was over the party saw a total of eleven big bears, although no others offered them shots.

Mr. Cornelius' companion, Mr. Powers, made his first kill the following day, a female Brownie that measured 9 ft. 8 in. from snout to tail.

The killing of Mr. Cornelius' second bear, late in the afternoon of May 10 furnished a thrilling and dangerous climax to the trip.

The party was returning from a cruise into Terror Bay, several miles from camp, when two bears were sighted some distance from the shore. As Mr. Powers had by that time filled his license, Mr. Cornelius and Walker, his guide, landed and started inland.

On reaching the place where the bears had disappeared, they searched cautiously through an alder patch for tracks and found where the huge animals had been digging for roots. Learning from these tracks the direction in which the bears were moving the two men selected a small open meadow and took up a watch. Within a few minutes one of the bears walked into an opening across the alder patch and Mr. Cornelius shot at a range of about 250 yards. The bear appeared to be hit and retreated into the alders. An instant later a bear was sighted at the edge of the opposite slope and Mr. Cornelius shot again, and again apparently registered a hit. The bear was out of sight at once.

Mr. Cornelius and Walker started cautiously down

(Continued on Page 148)

The largest bear measured 10 ft. 4 in. from snout to tail before skinning and probably weighed between 1,800 and 2,000 lb. Mr. Cornelius is shown here again, with his prize

Plumbing Retailers Discuss Elimination of the Wholesalers

AT THE Golden Anniversary convention of the National Association of Master Plumbers, in New York in June, one of the most interesting developments was the active discussion of a resolution which called for direct selling by manufacturers to dealers—in other words eliminating the wholesaler.

In the plumbing and heating industry, accustomed for years to a line of distribution by which the majority of its products moves from the manufacturer to wholesaler to dealer to consumer, such a change would be of tremendous consequence, not only to the wholesalers but to the retailers who would have to modify buying habits and to the manufacturers who would be called upon to revamp their entire selling methods.

Because of the interest shown by the large number of master plumbers who were present at that session; because of the desire expressed in the discussion that full publicity be given to the resolution in order that master plumbers throughout the country would be qualified to discuss and understand the subject, and because of the attention which such a development deserves from every one in the industry, we are reproducing the resolution in full on the facing page.

This resolution was introduced as a result of its unanimous adoption by the State Association of Master Plumbers of California at its convention in May. It was returned to the floor of the National convention without the approval or rejection of the resolutions committee, with simply the comment that it was so far reaching in its effects that the delegates should decide what action they wanted. And the final action was an expression of sympathy with the conditions under which California plumbers stated they were handicapped, an instruction to the National officers that all legal steps possible should be taken to relieve the California situation, and a further instruction that prompt notice be given to state associations of any action taken by the National in order to encourage a fuller discussion of the whole subject throughout the country.

E. J. Carroll, president of the Los Angeles association, favored the resolution. He feels that many wholesalers have worked against the best interests of the plumbing dealer, mentioning practices such as sales to dealers who do not pay their bills and the practice of relying on lien laws to get their payment when the reliability of the dealer they favored made payment uncertain. He said the manufacturer to wholesaler to dealer to consumer slogan was not being lived up to and had outworn its usefulness. The practices of some wholesalers, according to Mr. Carroll were wrecking the business building efforts of the merchant plumber.

Robert H. Plug-Felder of Philadelphia believes in the wholesaler as a necessity, pointing out that his services can be done away with on many things but not on all and not in all localities. After 50 years of trial, he feels the present favored system has proved its worth.

Wilbur J. Dosher of Wilmington, N. C., pointed out that the National Association has endorsed the distribution method now under fire; that the adoption of the resolution would wipe out one-third of the industry and that the wholesalers had in many cases been the best friends of the small contractor.

J. L. Murphy of New York City recalled that this golden anniversary convention celebrated the 50th anniversary of the efforts begun by master plumbers and manufacturers to determine the best method of selling the industry's products. He felt conditions outlined as prevailing in California should be met by the National Association using its great power to rectify them. But he warned against adopting such a resolution now because its effects were so tremendous that prompt acceptance of the resolution was unlikely. Manufacturers have their views, he recalled, as they would have to provide for reaching and doing business with 25,000 retail accounts instead of 1,000 wholesale customers. The time is not ripe, Mr. Murphy said, this change may come about in the future but only after the manufacturers are ready to accept it.

John D. Speer, Santa Barbara, Calif., president of the California association, replied that manufacturers are considering such a change and predicted that within three years the wholesalers would be eliminated. The experiences of California plumbing dealers had made further acceptance of present methods impossible.

REMOVING AN EXTRA PROFIT

Morris Jarcho, New York, congratulated California on having the courage to bring the subject out into the open. He said in New York many of the biggest jobs go to contractors who could not finance them unaided. He said manufacturers talk about the extra profit necessary in our present system against the direct-to-you plan, and he feels it is the jobber's profit which must go. Unwarranted extension of credit by wholesalers was responsible for today's conditions, said Mr. Jarcho.

Charles M. Swinnerton, Los Angeles, said many of the jobbers in Southern California are in competition with the master plumber. He said some of them furnish both money and foremen, so that men who couldn't borrow $10 at the front door get goods at the rear door. He felt plumbing dealers with established places of business were being swept aside by these unsound practices. Direct-to-you selling is a smoke screen, according to Mr. Swinnerton, with wholesaler competition as the real problem. If manufacturers put goods in the dealers' hands at proper prices the latter can meet competition. "California demands," said Mr. Swinnerton, "that the manufacturers and jobbers take their hands off of the retail business."

The motion finally approved, as given above, was made by Frank J. Fee of New York. Comments on it were made by Samuel A. Rice, Oklahoma City, Okla.; Joseph E. Berger, Bridgeport, Conn.; and David Craig, Boston, Mass.

California Association Asks Manufacturers to Sell Direct to Dealers

RESOLUTION No. 29

June 21, 1932

To the Delegates and Members of the National Association of Master Plumbers in the 50th Convention assembled in New York City

After carefully considering a survey of the distribution of plumbing materials on the part of an appointed Committee, the State Association of Master Plumbers of California respectfully submits the following resolution which was unanimously concurred in at our California State Convention, held in the City of Oakland, California, May 1932, for your thoughtful consideration and action.

(1) Using Southern California as an example, today there are five major manufacturers of plumbing material operating in this territory; one is selling through its own branch houses to the plumber; one is selling direct to the plumber, and three are selling through some twenty-nine jobbers to the plumbers. All five are maintaining large stocks in Los Angeles.

(2) There are some 1200 licensed Master Plumbers in this area serving about three million people, or an average of one shop for every 2500 population. Statistics show that it requires a minimum of 5000 population to support a plumbing shop under normal conditions. Under present conditions that number should be increased to 7500. Therefore, it would be necessary to confine the number of dealers to a total of not more than 400. These dealers would be compelled by the manufacturers to maintain showrooms and conduct their business to the satisfaction of the manufacturer. This would add not less than 300 new showrooms to the district where the public could see plumbing merchandise on display. The lack of proper display of fixtures by the plumber has always been the weakest link in our chain of distribution, and the principal reason why the direct to consumer sellers have made such large gains in volume.

(3) And whereas we believe the Dealership Plan, under the proper set-up is the best solution to our problems yet offered to the industry.

(4) And whereas we find the Master Plumber today operating as a Merchant-Contractor, with money invested in a sufficient stock to carry on as such, and buying his merchandise through the regular recognized channels, (manufacturer to jobber to plumber) unable to compete under conditions now existing in our industry.

(5) And whereas the direct to consumer sellers and mail order houses buying their merchandise direct from the manufacturer are in a position to take the business at from 25% to 33 % below the Plumber Merchant. The volume of business by this class of merchandiser has increased from 3 to 25% of the total volume of plumbing material sold in the United States in five years, proving beyond a question that this system (manufacturer to retailer to consumer) is sound, and will continue to grow.

(6) And whereas the jobber was quite necessary some few years ago when transportation facilities were slow and the factories were removed from the principal centers of distribution, today we have factory warehouses in every large trading center in the country, and it is possible, with our present day hauling facilities to place material from these manufacturers' stocks to the merchant plumber's shops in less than twenty-four hours.

(7) And whereas the jobber has been compelled by the competition developed by himself during the last ten years to resort to every known method of unfair trade practice, in an effort to maintain his position in the industry, and it is the belief of this Committee that the jobber is an economic burden and that he is no longer necessary to this business.

RESOLVED that we, the State Association of Master Plumbers of California ask the National Association of Master Plumbers to indorse the Dealership Plan of distribution for plumbing material; namely, manufacturer to plumber dealer to consumer.

STATE ASSOCIATION OF MASTER PLUMBERS OF CALIFORNIA

Jno. Speer, President.

"Money certainly will not be spent unless the article offered has a special appeal and the appeal is made to the right person." Selecting a limited number of best prospects and concentrating on them in connection with items you know they need will reduce to a minimum wasted energy

Reduce Your Prospects to Increase Your Sales

An Ultimate Consumer Recommends Use of the Best-Prospects Sales Plan

To the Editor:

EVERY time the mail man comes to my house he leaves anywhere from one to half a dozen pieces of advertising literature along with my letters. Very little of this literature is about things in which I am interested and consequently it goes into the waste paper basket unopened. My friends and neighbors tell me that they too receive about the same amount of worthless mail which they throw away unread. We are just average men and women living in an average size small city making our living at various occupations and having varied interests, but we all come under the heading of "ultimate consumer."

This being so, I think that the plumbing and heating contractor might be interested in knowing my reactions to advertising methods and in knowing what kind of advertising is most likely to convert me from a prospect into a purchaser.

There is just as much money in the country today as there was four years ago, but it certainly is not being spent as freely and will not be spent at all unless the article offered has a special appeal and the appeal is made to the right person.

In the years of our recent prosperity, it was the custom to send out advertising literature broadcast to a mailing list not always too carefully compiled. The theory on which this method of advertising was based was that out of a given number of letters sent out, a reasonable percentage of them would result in sales. The theory worked out fairly well at a time when nearly everyone was making money and was, therefore, willing to buy anything that appealed to him.

Today, however, many of the mailing lists are hopelessly out of date due to the change in the financial standing of those who were prospective purchasers four years ago. There is another method of sales stimulation which is effective and which may be called the best-prospect method.

The best prospect method can be illustrated by two examples which have, it is true, nothing to do with plumbing supplies, but which will show how the method may be applied to their sale.

PLAN ADOPTED BY OTHERS

Just a few days ago a friend who sells life insurance came into my office and asked me to give him the names of four men who needed more life insurance and who could afford to buy it. He knew I was intimately acquainted with many of the people in the community and that I knew something about their financial condition. He wanted the names of only four good prospects on whom he could concentrate his efforts. He has a card index of several hundred names, but rather than try to spread his efforts over this list, he preferred to concentrate on a few likely prospects whom he was reasonably sure could afford to buy insurance. I gave him all the details I could about the age, occupation, and salary of

the four men and how many children there were, so that he might decide what kind of insurance would be most likely to interest them. I have heard since that he has sold a policy to one of the four prospects.

Another example illustrating the same method of making sales occurred recently when a real estate company in the city where I live was obliged to sell ten vacant lots to meet a pressing obligation. Selling vacant lots in these times is difficult, but the lots were sold within three weeks by using the best prospect method. The directors of the company met and reduced the price of the lots to the lowest possible figure and then made a list of twenty-five men whose ability to buy was unquestionable. The names on the list were selected by the directors after a careful examination of the financial standing of a large number of prospects. Every one of the twenty-five men was interviewed and the lots were sold. Again the best prospect method produced results even under difficulties.

The same method could be applied to the sale of plumbing fixtures. The local plumber is usually well acquainted in his own community and knows whose house is old enough to need renewals in his plumbing system and who has money that would be spent on new equipment if the prices were low enough. If the plumber will make a short list of carefully chosen prospects and concentrate his efforts on selling to these prospects what they really need at the lowest possible price that will yield a small profit, he can be quite sure of doing a fair amount of business even in these hard times.

The June and July issues of DOMESTIC ENGINEERING have very useful articles on the practical application of this method of selling, and I recommend them to anyone who has something to sell.

(Signed) Michigan.

To the Editor:

"Your sales plan looks good to me, it is apparently inexpensive and simple, each of which is an important factor at this time. Frankly, I doubt if any expensive merchandising plan would create enough new business to make it pay as long as general conditions remain bad. That does not mean that the efforts put forth are not sound, for I feel that some of them are, and surely all of them combined will create some new business and will direct the attention of the consumer to the plumbing and heating contractor as his source of supply.

"In studying your plan, one weakness, if I may call it such, is that it does not furnish circulars or cuts for the contractor's use. This seems essential to me. The display of materials without the manufacturer's name is, I think, a good idea and possibly your plan could be carried a little farther along where reprints of the articles could be furnished to contractors for their use in selling efforts.

"Do you think that it would be within the scope of DOMESTIC ENGINEERING to make up what might be called a Contractor's Catalog which would carry out your plan of descriptive detail reading matter with every article (Mail Order House Catalog), but which would eliminate the manufacturer's name? Nothing of this kind has been introduced in our industry, and I can not help but feel that it would be a wonderful help to the contractors.

"I would like to ask you a question;—if a fairly complete catalog with good detailed descriptive matter were placed in the hands of the 30,000 contractors, do you not think it would be a valuable assistance to them in selling? To carry the idea a little further, it might even be possible for our industry to get out a small inexpensive catalog that the contractor could hand to his customer.

"My thought is this—that the plumbing and heating materials, pipe, fittings, etc., play quite an important part in all building construction and there are so many uses that they can be put to that would increase their demand if owners were just a little more familiar with them. The Hand Book, or Catalog referred to would show and describe in an understandable way, many of the more important things, warnings about inferior products, and numerous details that would bring the public to a better understanding of the quality and service our industry is in a position to supply. These Catalogs, I think, should not be sent out promiscuously, but rather handed out to good customers and home owners, with instructions to keep them for future reference.

"I appreciate that this is rather a large order, but we have a big job ahead." (Signed) Detroit.

"He wanted the names of only four good prospects on whom he could concentrate his efforts"

. . . . and then the Dishes

THEY seem like a burden much too big to bear at the end of a long, hot day, when the housewife has been working with inadequate equipment.

Lighten the day's tasks with correct plumbing. Be assured of a constant supply of hot water, automatically furnished at the turn of the faucet. See to it that the kitchen sink, the gas range, the refrigeration, is convenient and economical—because they will pay for themselves in the saving of frayed nerves alone.

Come in and see our display.

(In this space Your Name, Etc.)

A single-column plumbing ad

My dear Sir:

You have no doubt heard the complaint that goes up in almost every home at one time or another--"and then there are always the dishes to be washed!"

I have arrived at the conclusion that this complaint is not directed alone against the fact that dishes must be washed. That's merely the surface indication of needs that make themselves felt all day. Then, when evening comes, the sight of the stacked dishes is almost too much.

If, all during the day, the housewife is working with inefficient equipment, it's only natural that the last major task of the day seems like the proverbial straw that breaks the camel's back. It's the culmination of small difficulties through the day that furnishes the real motive back of the complaint against the dishes.

Let us assume that the same housewife has a kitchen that is adequately equipped. She has none of the small annoyances that come from equipment that has seen its best day. She has a constant and sufficient supply of hot water at her command at the turn of the faucet. She has a kitchen sink that needs very little attention to keep it sparkling; a sink that gives her a double portion of working space. She has a gas range that has timed and controlled operation. Her sink has a convenient swing-spout faucet with which she can easily secure a mixture of water at the temperature she desires.

With all this, her work goes efficiently. She needs to wait for nothing. She plans her day without having to allow for a drag caused by poor facilities. As a matter of economy, as well as because such equipment conserves her energies, the properly furnished kitchen is an investment of a highly important character.

May I suggest that, this evening, you make a quiet survey of your kitchen equipment? Then phone me and I'll be glad to be here at any time convenient for you. You can drop in and see just what I mean when I say that modern kitchen fixtures can be as economical and convenient as modern office appliances.

Very truly yours,
HARRY BROWN

A plumbing sales letter

LOOK FOR WIVES TO STAGE REBELLION

"I've often wondered," says Harry Brown, local plumbing contractor, "why a lot of housewives haven't staged a rebellion. They are entitled, under the constitution, to seek life, liberty and happiness.

"But when you see the inadequate equipment that some of them must work with—back-breaking sinks, out-of-date water heating contraptions, and what-not, you know that their constitutional guarantee is hardly more than a phrase. I should think that family happiness alone would be sufficient reason to see that the lady of the house is adequately equipped for serving her family."

Hand this publicity item to your newspaper

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING — without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve—six months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

Save Summer Energy

Housewives! Save your energy! See to it that your kitchen and other plumbing equipment is adequate—that it does not reduce you by the day's end to an enervated state where there seems to be pleasure in nothing. You can save energy, time and money by studying the modern ideas in plumbing fixtures and adapting them to your needs. Drop in for a visit and we'll be glad to show you how your daily tasks may be lightened—especially during the warm summer months.

(In this space Your Name, etc.)

A single-column plumbing ad

SERVICE

My dear Madam:

A difference of ten degrees downward during the summer months means greater comfort. That same drop in temperature during the winter months means--what?

In most homes--where the heating plant is hand-fired--it means drudgery and a waste of fuel. Because no hand-fired plant can be so handled as to give just the amount of heat required to counteract the fluctuation in temperatures outside.

Thus, when there is a drop of ten degrees during the winter months, we "push" our heating plants. But instead of merely compensating for that drop of ten degrees, we find that we have raised the temperature of the home more than is necessary. We are uncomfortably warm; perhaps we open a window or two to cool the house--and we have wasted an appreciable amount of fuel.

Equip your heating plant with automatic temperature control. Then, when you need sufficient heat to counteract a drop in the outside temperature, you get that amount of heat and not much more. You thus conserve fuel, because you are using only enough to give the required indoor temperature; and you save energy because the automatic controls take care of pushing or checking the heating plant.

We can install such equipment for you now at new low prices; and if you desire, we can do so under a convenient payment plan. The saving in heating costs alone will take care of a part, or perhaps all, of the installed cost.

If you will telephone, I'll be glad to call at your home at your convenience.

Very truly yours,
HARRY BROWN

A heating sales letter

10° Change in Temperature Promised

And then some—for this winter. But a ten-degree drop means more next winter than it would now. The question is this: Will your heating plan respond automatically with just enough warmth to overcome that drop this winter—or will you, as in most homes, find that you've overheated the house in an attempt to meet the change? Automatic controls will do the job accurately—and save you money.

(In this space Your Name, Etc.)

For newspaper ad or blotter copy on heating

Note how the copy on each of these two pages dovetails. The ad copy, the sales letter, the publicity item—in each case they help each other. Use them in your efforts—and send us copies.

COLDER WEATHER NOT SO WELCOME

"We think it's great during summer," says Harry Brown, local heating contractor, "when the weather man predicts a ten-degree drop in temperature. In winter it's something else again.

"In most homes when old winter gives us an extra ten-degree blast people force their heating plants and more than make up for the reduced temperature. That wastes fuel—which is not at all necessary. A controlled heating plant will register the drop in temperature and call for just about enough heat to compensate for it.

"We're going to have that cooler weather—this winter—and since we can't control the weather, we ought to control the heating plant."

A piece of heating publicity

When the Temperature Drops

IT DOESN'T greatly matter—in summer. But when the same thing occurs in winter, it is the occasion for a great waste of fuel.

People force their heating plants, only to discover that they've given themselves more heat than necessary to compensate for the drop. An automatically controlled heating plant would deliver the additional heat necessary to overcome the lowered temperature, and let it go at that, saving fuel and, of course, saving the drudgery of hand-firing.

Let us explain how we can give you the economical benefits of automatic control on your present heating plant.

(In this space, Your Name, Etc.)

A single-column heating ad

How a Big Plumbing Installation Was Planned

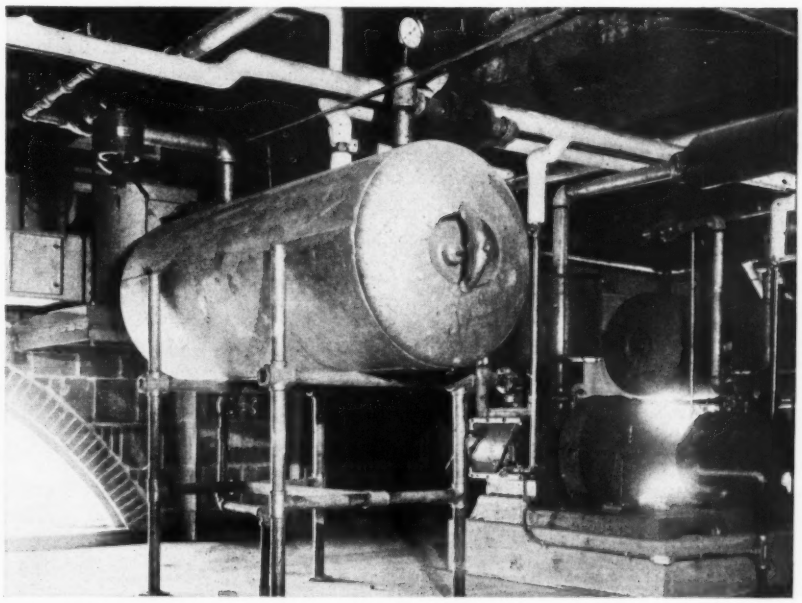
By JAMES A. COTTER

FOR gas, the two groups of the new and huge New York Hospital and Cornell Medical College Association project have independent systems. In the southerly group of this large hospital complex, a 6-in. service was taken from Exterior Street at the women's clinic building. The second 6-in. service was taken from York Avenue at the bacteriology wing of the medical school. The services are metered and cross-connected with a 6-in. main. From this main a 4-in. loop supplies the psychiatry building and a 6-in. branch supplies the medical school group, and one for the women's clinic. Branches are taken as required for the main hospital building. It will be possible to install separate meters, if required in the future for auditing purposes, to measure the gas consumption in the psychiatry, the women's clinic and the medical school. In the northerly group there is one 6-in. metered service from York Avenue at the nurses home. This service is continued as a 4-in. header through the power house with a plugged outlet for a connection to a future service from Exterior Street. Each of these buildings may be separately metered if desired, at a future date.

Each group of buildings has its own chilled water system, for which tinned brass pipe, insulated with cork covering, is used. In addition to the regular drinking fountains this water also serves the main and diet kitchens, the Scotch douche in the hydrotherapy suites, and the various tanks and sinks in dark rooms. The dark rooms are supplied also with hot and cold water and these three services in each dark room are passed through a mixing valve which enables the user to maintain easily the required temperatures at any period of the year.

In the southerly group the system used is the upfeed, open tank type, with

At the top of this page is shown the intersection of the acid, soil and conductor drains in the sub-sub-basement of the medical school building



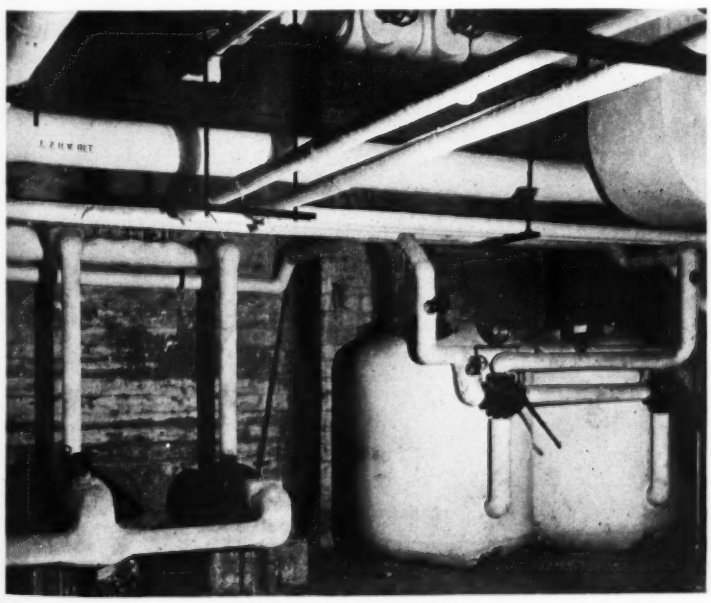
This shows the vacuum tanks and pumps for the vacuum systems serving the surgical and operating rooms. They are located on the 11-A floor of the main hospital building

a balance tank at the top of the loop. The source is in the sub-sub-basement of the main hospital at grade 0.0 and it consists of a filter unit, three direct-connected motor driven centrifugal pumps and a cooling tank. The filter is a duplex unit of the quartz and charcoal type. The cooling tank is of riveted steel. It is insulated and has approximately 4,400 linear feet of 1¼-in. brine piping in continuously welded trombone coil sections so arranged that any section may be easily cut off or removed. The length of the tank is increased to permit the installation of more coil sections if the demand requires it at any future time. One of the three circulating pumps, which is of 12 g.p.m. rating, serves the upper zone and one of 110 g.p.m. rating serves the lower zone while the third one is an emergency for either of the other two. There are three systems for this southerly group, namely, the upper zone, the lower zone and the psychiatry building. The two latter systems are served by the one header.

The upper zone system has its balance tank of 50 gallons capacity on the 26th floor level. The low zone system has its balance tank of 100 gallons capacity on the apparatus floor above the 11th floor. A loop is taken from this low zone system for the medical school wing and one for the women's clinic. The psychiatry building loop has its balance tank of 50 gallons capacity at the 9th floor level.

In the northerly group, the apparatus is located in the sub-basement of the power house. The system for this group is the overhead downfeed type with a back pressure valve at the cooling tank on the return of each loop. From the main supply header two branches are run to form loops. One loop is for the power house and it returns from the 5th floor, independently, to the cooling tank. The other loop is for the nurses home and it returns from the second floor to the tank. Chilled water is available only on the working room floors of each building. The filters are similar to those in southerly group. The pumps are in duplicate and are rated for 15 g.p.m. The tank is insulated and contains about 500 linear feet of 1¼-in. pipe, in three separate coils. This tank also has excess storage space for future coils when required.

The vacuum for the hospital and laboratory use is obtained by means of high dry vacuum machines. In the sub-basement of the anatomy and bio-chemistry building and the sub-sub-basement of the bacteriology building, there are installed units consisting of a pump, having a capacity of 90 cu. ft. per minute



These chilled water circulating pumps and filters are located in the sub-sub-basement of the main hospital apparatus room

exhausted to a vacuum of about 27 in., connected to a 50-cu. ft. tank. The north, center and south sections of the medical school, each, are supplied from the unit located in their own sections. These three units are also cross-connected with a 4-in. header run at this sub-sub-basement ceiling. The automatic motor controls for the pumps are so arranged that all motors cut out at the same vacuum but cut in at staggered starting points. The sequence of starting may also be varied.

The vacuum for the hospital is not connected with the medical school equipment. For the hospital use, there are two units located adjacent to each other on the apparatus floor, above the 11th floor, in the main hospital building. One unit which consists of a pump, having a capacity of 65 cu. ft. per minute exhausted to a vacuum of about 27 in., which is connected to a 35-cu. ft. tank. This takes care of the operating rooms in the main hospital. At every outlet for this system there has been installed a special automatic pressure and suction regulator so that the desired vacuum may be had as required at each outlet. The other unit on this apparatus floor consists of two pumps each, with a capacity of 180 cu. ft. per minute exhausted to a vacuum of about 27-in., and a 50-cu. ft. tank. This unit takes care of the surgical and urological wards of the main hospital and also the vacuum requirements of the women's clinic building. For this unit there has been installed at the tank a special valve which reduces the vacuum from 27 in. in the tank to about 10 in. in the mains. The low points of the system are conveniently dripped into the drainage system and it is possible to flush the entire system with water. The two units were cross-connected at their tanks so that each might serve in an emergency for the other. It may be of interest to note here that the apparatus furnished as hospital equipment to be used at the outlets on this system will be of the two-bottle type with an automatic cut-off in one bottle to prevent the overflow of suction fluid into the vacuum piping and pump.

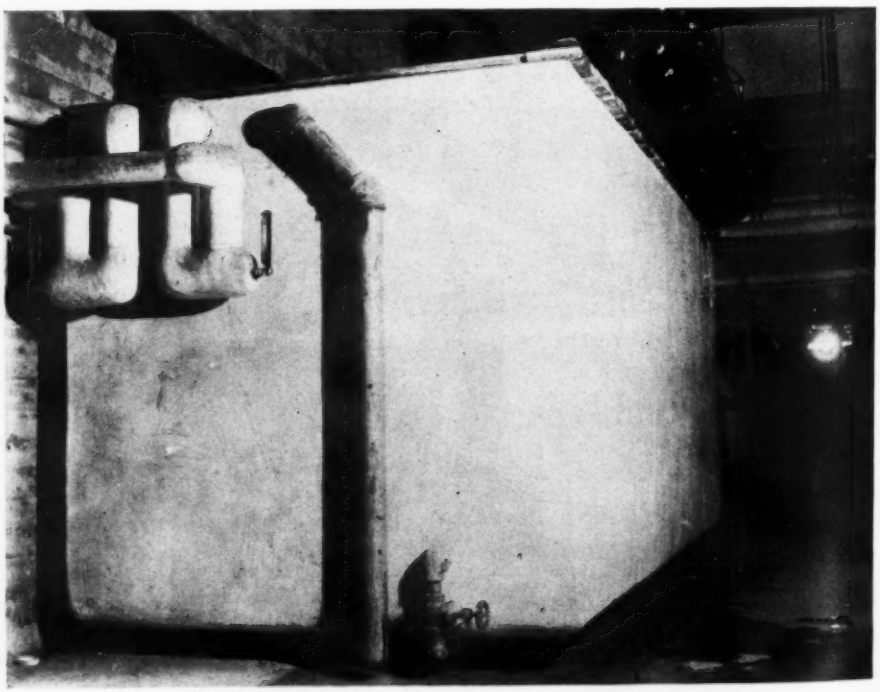
As a part of the hydrotherapy suite, there is located on the 8th floor of the main hospital a pool of the recirculating type. It is 10 ft. wide, 26 ft. long with a water content of about 6,500 gallons and a water depth of 4 ft. on the deep end and 2 ft. on the shallow end. A single outlet and two inlets have been installed. The wastes from the scum gutters have been connected to the wastes from the floor drains of the deck level so as to discharge into the sanitary drainage system. The low point of the pool is raised sufficiently above the 8th floor grade to install conveniently all of the filtering apparatus in an adjacent room on this floor. There are three cast iron filter tanks filled with graduated sand and gravel. Each has been designed to be of sufficient size to permit of proper filtration at the slow rate of about 2 g.p.m. Soda and alum are added to the circulating water through a Venturi type feeder. The circulating pump is of sufficient capacity to turn the entire contents of pool over once in 5 hr. which is about one complete turnover for each morning and afternoon clinic. The heater is of the instantaneous copper water tube type and is capable of raising the entire contents of the tank 20 degrees in two hours. This will make it possible to use in an afternoon clinic water 20 degrees hotter than is required for a morning clinic. The sterilization of the water is accomplished by introducing into the circulating line a fixed amount of chlorine in the liquid form. There is also installed in the system between the pool and the pump a hair and lint trap.

This concludes Mr. Cotter's series of three articles on this most interesting group of buildings

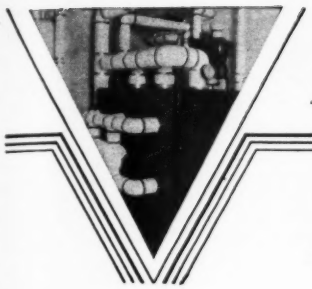
ARRANGEMENTS FOR FIRE FIGHTING

The standpipes are considered as a single system for both groups of buildings. The system is built up on three sources of water supply, the high zone house tank

(Continued on Page 746)



This tank holds the chilled water for drinking and the X-ray developing sinks. It is placed in the sub-sub-basement apparatus room of the main hospital building



ANSWERED

QUESTIONS FROM OUR READERS AND ANSWERS BY OUR ENGINEERS

Wants Information About the Hoover Code

TO THE EDITOR:

I am interested in securing information concerning the report of the U. S. Department of Commerce entitled: "Recommended Minimum Requirements for Plumbing." I refer especially to the illustrations on pages 184 to 187, and to the maximum distance of 5 ft. allowed between a trap and its vent.

After thoroughly going over this booklet, and referring to the 1929 State of New York standard plumbing code, I am favorably impressed and believe that this code, from an economical standpoint, will be a fine thing for our city and will eliminate much additional cost as well as help to safeguard our health.

I would like to get your opinion on these different types, and information as to states and cities that have adopted and are using this code.

New Mexico. J. M.

TO THE READER:

This book is the so-called Hoover plumbing code and report.

The sixteen illustrations on pages 184 to 187 are typical plumbing elevations which are in agreement with the recommendations of the Hoover code and the outcome of experiment and research conducted by the U. S. Bureau of Standards.

"J. M." asks for our opinion on these different layouts. We are favorable to the Hoover recommendations, and that being the case we believe that all of these plumbing elevations show excellent plumbing practice, practice that is simplified and yet demonstrated to be safe. Inasmuch as all are based on the same general principles, we would not accept one layout and reject another but consider all of them to be excellent for the several different types of dwellings for which they are designed.

Under the heading "Unvented Horizontal Branch Waste Pipes," page 56, will be found additional information supporting 5 ft. as the maximum distance from trap to vent. Experiment showed that a longer distance might be safe, but the 5 ft. distance was agreed upon as conservative practice. There are a considerable number of cities allowing a greater distance and also many which make the maximum quite a bit less than 5 ft. Of the two extremes, we would favor a smaller distance than 5 ft.

In our opinion, no mistake will be made by adopting the Hoover code. However, often, and probably generally, there will be local conditions which make it wise to make some modifications of the original recommendations.

Scores of cities in various parts of the country have adopted the Hoover code and are successfully working under it.

The states of Maine, New York, Iowa, Indiana, Michigan and Florida have adopted this code in regular form or in a recommendatory way, and several others are endeavoring to get their state legislatures to accept it.

Are These Plans in Accord With Sanitary Requirements

TO THE EDITOR:

For many years the plumbers of Puerto Rico have sent plans to the department of health for approval, drawn as the plan enclosed, and they have always been

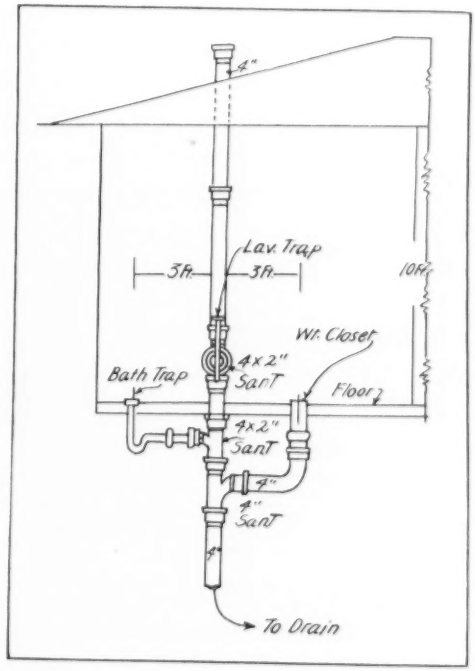


Fig. 1

approved. But now the sanitary engineer of the department of health says that this arrangement is deficient because the traps of the lower fixtures are not protected from siphonic action.

Please state your opinion regarding this matter.

Puerto Rico. L. B. D.

TO THE READER:

Before discussing the merits of this problem, we want to say that there are always two sides to every question, and that before passing judgment we would like to hear the arguments advanced by the health authorities for their changed attitude.

Figs. 1 and 2 show elevation and plan of the plumbing layout that is under discussion.

Our judgment is that the original stand by the officials is the correct one. We feel that to demand the venting of the bathtub and water closet under conditions here shown is unwarranted, and would actually result in add-

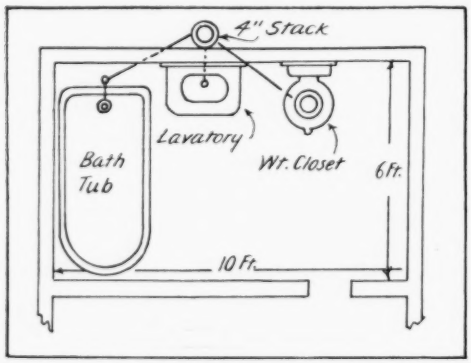


Fig. 2

ing expense to the installation without improving or making the work safer or more sanitary in any way whatever.

Venting is made use of in plumbing operations, to overcome the siphoning of the fixture traps.

The test to be applied to the work shown in Fig. 1 is whether as connected, siphonage can occur in the case of either the bathtub or water closet.

Without any question whatever, the possibility of siphonage is entirely absent. In fact, we can think of no circumstances under which there would be less danger of siphonage than in this particular case.

The bathroom is installed in a one-story house,—with 4-inch stack passing through the roof, and with no fixtures discharging into the stack on some higher floor. Moreover, the work is made particularly safe by connecting the bathtub above the water closet connection, thus preventing any aspirating effect that might be created by the passage of the closet waste past the entrance of the bath waste into the stack.

Fig. 1 shows the water closet and bathtub each within 3 ft. of the stack. Most plumbing codes would allow this distance to be 5 ft. without venting.

The layout in Fig. 1 is excellent and the venting of the two fixtures entirely unnecessary.

About Septic Tank Installations

TO THE EDITOR:

I propose to construct a septic tank, but hesitate to carry out my plans before consulting you.

The land surrounding the house slopes away. The present sewer line ends 50 ft. from the house, which I believe is the proper distance for the location of a septic tank.

Here is my problem,—instead of a fall of 8 inches per 100 ft. in the pipe leading to the septic tank, the present drain has a fall of 10 ft. per 50 ft., and it cannot be changed.

The question is whether the septic tank will function properly with the sewage entering it with the force it would have.

Will not the sewage in the septic tank be constantly stirred up every time sewage enters it? Will the stirring affect the bacterial action of the septic tank?

If there is objection to the fall as stated above, what would you advise?

Connecticut. C. L.

TO THE READER:

We think C. L.'s problem will be quickly settled when we state that it is not at all necessary to locate the septic tank 50 ft. from the house, but that it may be located comparatively close to the house. This means that it can be placed probably on the same level as the house.

Correspondent is correct in believing that it would not be well to allow the sewage to enter the septic tank under such momentum that the contents would be stirred up. The bacteria that act upon the sewage entering a septic tank, breed and thrive in a heavy crust that forms at the top of the tank, and nothing must be allowed that would disturb or break up this crust.

Nothing is said in correspondent's communication concerning disposal of the sewage after it leaves the septic tank. If an underground absorption bed is to be used, the sewage must not be carried in these lines of tile at too sharp a pitch, as this would send most of the sewage to the far end of the lines, giving the other end of the lines practically no work to do and overworking the far end. This can be overcome by laying horizontal lines at different levels on the slope, passing the sewage from one level to another.

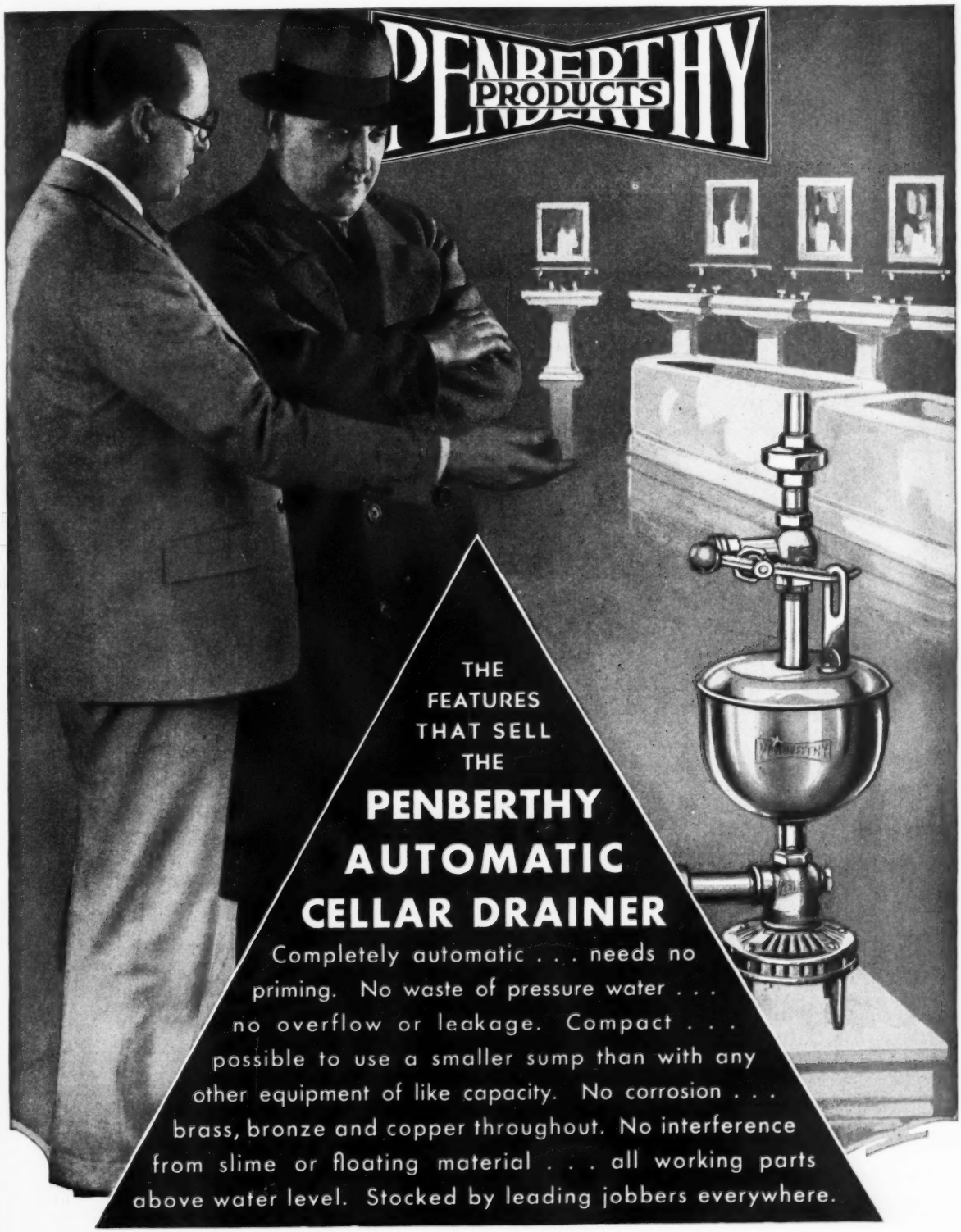
Sees Need of Gas Piping Code

TO THE EDITOR:

Some time ago a furniture mover of this city removed a gas stove, and did not plug the opening. Later a plumber, not aware of this opening, turned the gas on without making the proper inspection or test, and a death resulted therefrom.

This matter has been taken up with several cities, and in their replies they stated that they had no laws that would cover the situation referred to.

In view of the above, we are contemplating passing



THE FEATURES THAT SELL THE

PENBERTHY AUTOMATIC CELLAR DRAINER

Completely automatic . . . needs no priming. No waste of pressure water . . . no overflow or leakage. Compact . . . possible to use a smaller sump than with any other equipment of like capacity. No corrosion . . . brass, bronze and copper throughout. No interference from slime or floating material . . . all working parts above water level. Stocked by leading jobbers everywhere.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

A Toilet Seat Built to Sell *today*.....

The COLONIAL OPEN FRONT SEAT

No. 909—Open Front Colonial Seat for regular standard size bowl, 5½" between hinge post holes. Furnished in white, orchid, canary, yellow, green, pink, rose, ivory, blue and gray. Cast brass, chrome plated hinges with one-half inch bar made from eighteen gauge brass tubing.

RESPONSIVE to the demand of the day, the No. 909 Open Front and the 900 Closed Front Colonial Seats, built to sell *today*, strike a new note in economy. These seats are built to wake up dollars inactive because of strained buying conditions. Your buying market, uncertain in many cases, will be instantly alive to the opportunity offered by these new seats at an unbelievably low price.

The Nos. 900 and 909 Seats are made from selected hardwood and due to the character of construction are practically split-proof. These new members in the MILLER line come in a variety of striking colors, protected by a durable finish that will withstand the abuses to which the average toilet seat is subjected.

See your jobber at once. He will help you get started after profitable seat business with Colonial seats.

CHAS. A. MILLER CO. : STURGIS, MICHIGAN

a law to prevent a repetition of this disaster. Any information you may give us will be appreciated.

Virginia. H. F. J.

TO THE READER:

It seems to us that this unfortunate occurrence points to the fact that it ought not to be Tom, Dick and Harry's right to work indiscriminately on gas piping any more than we feel it is right for any but a qualified, licensed plumber to have anything to do with house drainage, or for any but a qualified, licensed electrician to perform electrical work.

It sometimes requires such a circumstance as this to wake people up to the need of regulating such services by requiring mechanics to show that they are qualified, and to take out a license.

Another point that comes with the consideration is the matter of bonding. Many cities require a plumbing contractor to give a bond, running generally from $500 to $5,000, and this bond should cover not only correct performance of work, but also such conditions as the one we have had presented in this letter.

In our opinion licensing and bonding would help to overcome such conditions as have been described.

About Domestic Hot Water Supply Systems

TO THE EDITOR:

Enclosed find sketch of a hot water circulating layout, Fig. 1, which we wish to install in a residence having four bathrooms, two toilet rooms, a kitchen sink and laundry.

You will note that the hot water flow line from the 60-gallon storage tank will be carried to the attic, all

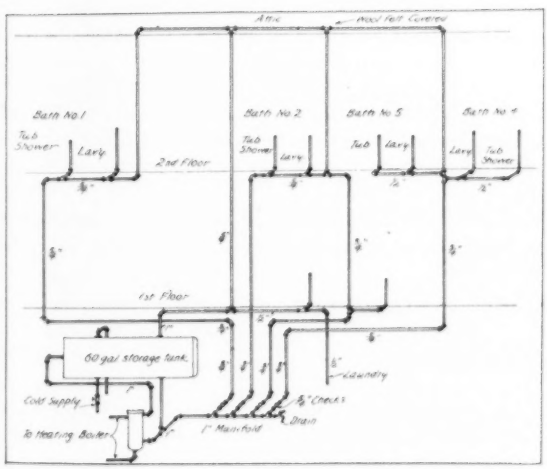


Fig. 1

fixtures to be supplied from the four returns in different parts of the buildings, these to be connected together into a 1-inch manifold made of 1-in. by ¾-in. Y fittings, with checks placed on each 45-deg. branch into the manifold.

The manifold is to connect to the cold intake of heater, thus completing the circuit.

Any corrections or suggestions will be appreciated.

Indiana. E. M. V. N.

TO THE READER:

The general layout of this hot water supply system seems to be very good, and we believe it will give excellent results.

Our only criticism concerns pipe sizes.

We believe the 1-in. flow line that rises out of the hot water tank, should be continued full size to the attic, instead of being reduced to ¾-in. when it begins to rise.

This is an overhead system, and when the four vertical lines supplying the four bathrooms are alluded to as returns, that is not the real fact. They are drop risers. Below the bathroom, however, they are actually returns, and we believe from the bathroom to the manifold, they do not need to be as large as ¾-in.

Wants a Heating Ordinance to Compel Good Practice

TO THE EDITOR:

We would like to inquire if you are in a position to draw up a heating ordinance for both high and low pressure installations, for hot water heating and for gas appliances and their installation. The reason we are writing you in regard to this matter is that a number of installations have been made in our city by men who know nothing of the heating business and just a few weeks ago one of them installed a closed hot water heating system without a relief valve of any description and, of course, the boiler cracked. Another instance was the installation of a steam heating plant where the low ends of the steam mains were only 4 in. above the boiler water line, which, naturally, resulted in hammering; still a third case was a vapor system without the placing of vents on the end of the return main before it dropped down under the water line and so on.

If we could get a heating ordinance and an inspector to take care of such work, we beljeve it would materially improve the conditions of the heating industry in this city.

Illinois. E. P. P.

TO THE READER:

Our correspondent evidently has in mind a heating ordinance modeled along the same lines as a plumbing code, and there is no doubt that if this be done the results would be as beneficial to the heating industry as the plumbing codes have been helpful to the master plumbers and the plumbing industry in general. Still there are good plumbing codes and some which are not so good, the chief difficulty being in every municipality establishing its own regulations or in the adoption of a code which is too general, leaving many essential features to the whim and caprice of whoever happens to

be the inspector or his chief. A much more satisfactory solution seems to be in the adoption by the state of a state sanitary code which then applies to all installations in the state.

Many cities have codes and regulations which in some particular apply to the heating system and its operation. Some states have a state boiler code for high pressure boilers. In other instances the engineers and firemen are licensed to operate plants of limited sizes and pressures in accordance with the stipulations on their licenses and according to their ability to pass examinations and having rendered satisfactory service for a period of a certain number of years under some other licensed engineer or fireman.

As the situation now stands, the boiler insurance companies supply inspectors for inspecting boiler plants and their requirements must be met and maintained when boiler insurance is carried.

The next type of code which applies very directly to both high and low pressure heating plants is the local smoke ordinance which limits the quantity of smoke emitted and usually has a time limit for dense smoke emission during periods of fire cleaning. If there is a state or city boiler code this is usually modeled after the A. S. M. E. Code for High Pressure Boilers, although some additional provisions are often included. Then the fire department of the bureau of public safety may come in with demands for safety requirements in buildings in general, and the building code may have some provisions which apply, such as the covering of the boiler room ceiling with a coat of plaster on wire lath.

Thus it will be seen that where heating is regulated at all it is controlled piecemeal and requirements from a half a dozen sources must be satisfied. Our correspondent has an excellent idea of incorporating these requirements into one heating code which will include all of the best requirements but such a code would be, in a large part, only a re-enactment of the various demands now made in several instruments and, in fact, there is no regulation that we have ever heard of which would stipulate the requirement of a vent on a vapor system, the distance the steam main must be kept above the boiler water line or even the placing of a relief valve on a closed hot water system. As a matter of fact these items are more a matter of design than they are of anything else. The distance which a steam main must be kept above the water line of the boiler is determined by the amount of pressure drop which occurs in the main and this, in turn, may be controlled by the sizing of the main so that it is hard to legislate on a variable subject of this nature. The use of vent valves and their location is another matter of design and air relief by some other means is not at all impossible in a vapor system. Even the closed hot water system can be provided with a tank of sufficient capacity so that no relief valve is necessary so long as the tank is not allowed to become water logged. We entirely agree with our correspondent that the items he suggests should be included as a matter of good practice but we are also inclined to think that the contractors who installed the systems mentioned have pretty well established the fact that they do not know the established practices of the trade.

This same automatic gas hot water heater display was shown recently in the showroom of the Interstate Plumbing Supply Co., Albany, N. Y., and also in the display room of the Aird-Don Co., Troy, N. Y.

Why Did This Boiler Bulge?

TO THE EDITOR:

We installed a 200 gal., 200 lb. test copper boiler and it seems that this boiler has been forced out of shape and has bulged in sections due to pressure; the boiler is equipped with an automatic gas heater regulated so as to shut off when the water temperature reaches 140 deg. Fahr. as well as a temperature and pressure valve. The customer states that the pressure relief valve, however, does not operate at 190 lb., and that—as a result of the gas heater going on when water is not being drawn off of the tank—the temperature is not reduced and that sufficient pressure is built up to cause the bulging in the tank. Can you tell us if this is the cause of the trouble?

Mass. G. C.

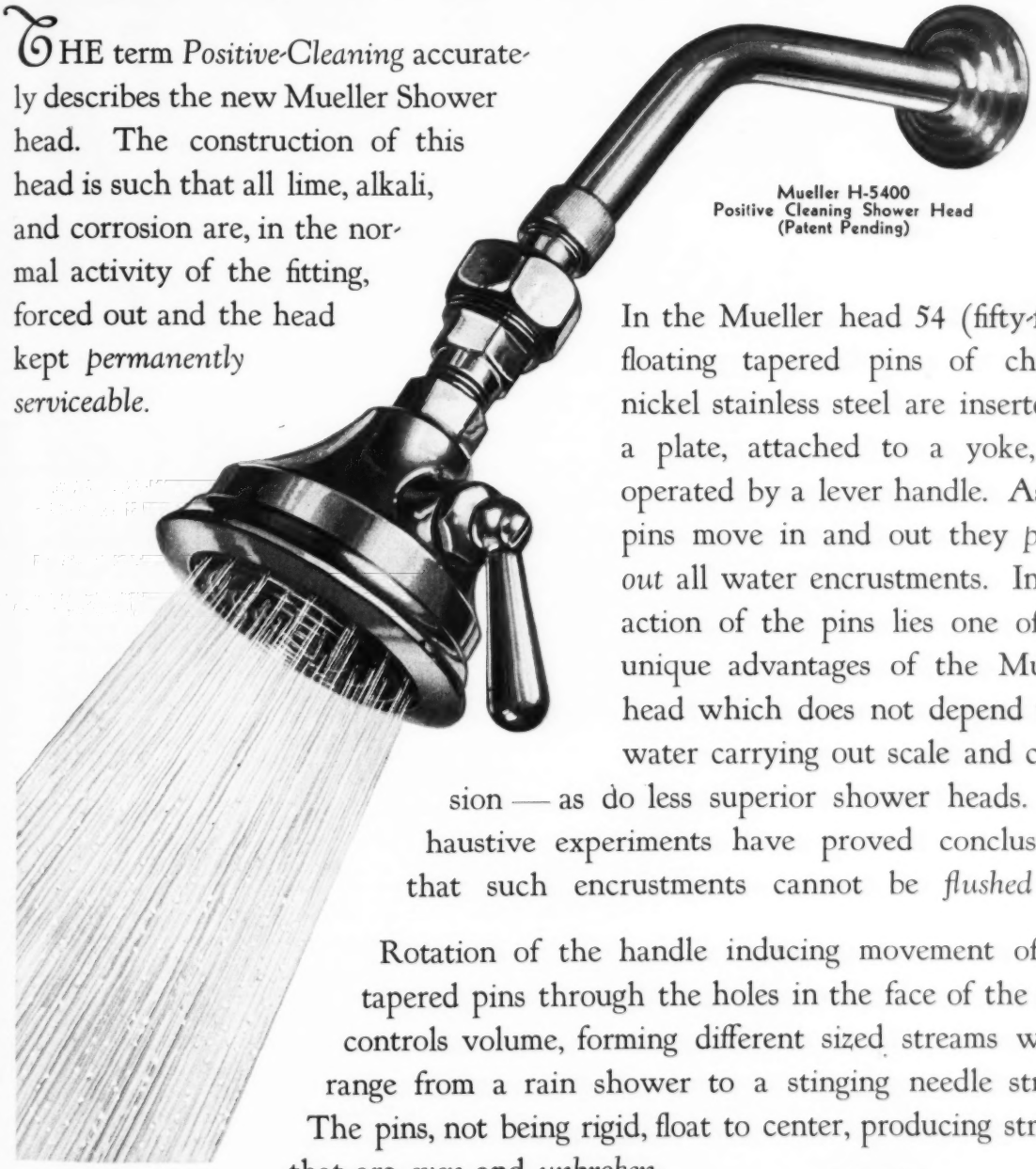
TO THE READER:

We are of the opinion that the copper hot water tank would not bulge unless the water were heated with both the valve on, the cold water supply on, and the hot water outlet closed. This statement is made because of the fact that whether the relief valve works, or not, the pressure in the tank should not do any damage unless it exceeds 200 lb. per sq. in., and it is not plain how such a pressure could be built up unless the inlet and outlet of the tank were closed at the time the water was being heated.

As far as the temperature is concerned the gas

A POSITIVE-CLEANING SHOWER HEAD

THE term *Positive-Cleaning* accurately describes the new Mueller Shower head. The construction of this head is such that all lime, alkali, and corrosion are, in the normal activity of the fitting, forced out and the head kept *permanently serviceable.*



Mueller H-5400
Positive Cleaning Shower Head
(Patent Pending)

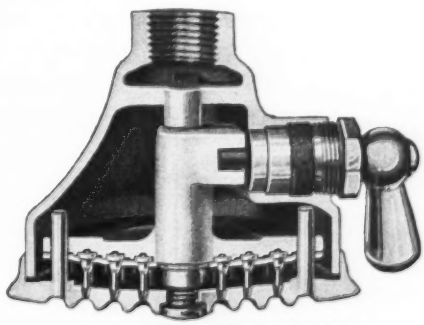
In the Mueller head 54 (fifty-four) floating tapered pins of chrome nickel stainless steel are inserted in a plate, attached to a yoke, and operated by a lever handle. As the pins move in and out they *punch out* all water encrustments. In this action of the pins lies one of the unique advantages of the Mueller head which does not depend upon water carrying out scale and corrosion — as do less superior shower heads. Exhaustive experiments have proved conclusively that such encrustments cannot be *flushed out.*

Rotation of the handle inducing movement of the tapered pins through the holes in the face of the head controls volume, forming different sized streams which range from a rain shower to a stinging needle stream. The pins, not being rigid, float to center, producing streams that are *even* and *unbroken.*

The cut-away view well illustrates this new Mueller Shower Head construction.

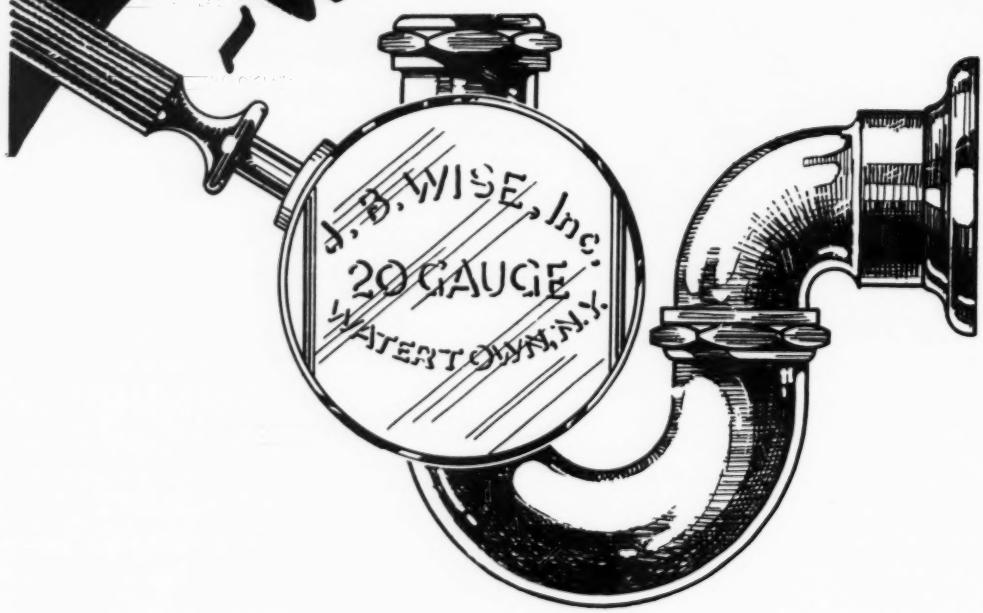
Write today for the new booklet on the Mueller Positive-Cleaning variable stream shower head.

MUELLER CO., Decatur, Illinois



Cut-away View Mueller H-5400

17-20-or-what have you!



On every trap in the "WISECO" Line you will find clearly stamped the manufacturer's name and the gauge of tubing. You are always sure when you specify "WISECO PRODUCTS" that you get what you pay for. It is an important added protection to you and your customer.

Think this over and insist on "WISECO PRODUCTS" in the future. Your jobber can supply you.

- WISECO - TRADE MARK - EST. 1877 - INC. - INC. 1913 -

J. B. WISE, INC.

WATERTOWN :: NEW YORK

NEW YORK CHICAGO DETROIT ATLANTA LOS ANGELES SEATTLE SAN FRANCISCO

THE STANDARD OF QUALITY SINCE 1877

shuts off, when the water reaches 140 deg. Fahr. so it makes little difference in the tank whether water is being drawn off, or not, for in one case the gas will continue to burn until 140 deg. Fahr. is reached, and in the other the gas will simply continue to hold 140 deg. Fahr., or near to it, until water is again drawn off. As far as pressure is concerned, it would be impossible to generate pressure in the tank as long as the hot water line to the fixtures was open and there was any leakage at the fixtures. Of course, if an absolutely tight system is assumed without any air chambers or leaking faucets, it theoretically would be possible to generate pressure when the water is heated as the water expands a little as its temperature rises and this expansion must go somewhere.

Practically it is very difficult to get a system as tight as would be necessary to do this and one dripping faucet would be all that is needed to relieve the pressure. In any event the relief valve is assumed to take care of this pressure, and even if the relief valve failed to operate until 190 pounds is reached this should not damage a 200 lb. test boiler, although it is not a good thing to do. It is not clear why our correspondent does not put a pressure gauge on the boiler when it is cold, close off tightly every faucet in the house and then allow the gas to heat the water under this condition and thus prove what pressure would be generated when this occurs. If the pressure should rise to over 200 lb., without the relief valve opening and under the conditions existing in this particular installation, then we would say that there may be some truth in the customer's contention but if the pressure does not go over 200 lb., or relieves through the relief valve before reaching 200 lb., then we would say that the customer is not correct in his contention and that the trouble must lie elsewhere.

Can You Answer These Questions?

A Question and Its Answer

The following question was asked in the June issue, and the following answer is by a reader:

How many square feet of copper tube heating surface would you consider as necessary in a hot water storage heater in order to heat 1,000 gallons of water per hour from 50 deg. Fahr. to 180 deg. Fahr. with steam pressure on the coils at atmospheric (zero gauge) pressure?

IN A hot water heater the amount of water heated per hour depends on the amount of heating surface installed and the temperature difference between the steam and the water. The kind of heating surface such as steel, wrought iron, brass or copper, also will affect the rate of transferring the heat into the water to some extent. The temperature difference between the steam and the water is secured by subtracting the average water temperature from the average steam temperature and using this difference to determine the average transmission per hour per sq. ft. of coil surface. The average temperature of the water in this particular case is half way between the entering temperature and the temperature to which the water is heated and is obtained by adding the two temperatures and dividing by 2 thus:

Entering temperature of water.....	50 deg. Fahr.
Final temperature of water.....	180 deg. Fahr.
Sum of the two temperatures.....	230
Av. temperature, 230/2 or.....	115 deg. Fahr.

Since the steam is at atmospheric pressure its temperature is 212 deg. Fahr. and the average temperature difference which will exist between the steam and the water will be

Temperature of steam	212 deg. Fahr.
Average temperature of water.....	115 deg. Fahr.
Average temperature difference.....	97 deg. Fahr.

Referring to a table of the heat transmission from steam to water for copper and brass surface with an average temperature difference of 97 deg. Fahr. it is found that this transmission will be around 25,000 Btu per sq. ft. per hour.

If the number of Btu transmitted per sq. ft. per hour under the conditions under which the heater is operating is known and the total number of Btu required can be computed, the amount of coil surface required will be the total Btu required divided by the Btu transmitted or supplied by one sq. ft. of coil surface; so the next thing is to find how many Btu are required to heat the quantity of water through the temperature range specified. The number of Btu required to heat a pound of water 1 deg. Fahr. is 1 Btu, so to heat 1,000 gallons of water through a range of 180 Fahr. — 50 Fahr., or 130 Fahr., will be

1,000 × 8 1/3 lb. × 130 deg. Fahr. or 1,083,333 Btu

This is the number of Btu the whole coil must deliver and if one sq. ft. of coil will deliver 25,000 Btu the number of sq. ft. of heating surface required will be

1,083,333/25,000 or 43 1/3 sq. ft. plus.

Owing to various contingencies such as dirtying up of the tubes, inadequate steam supply at times, overloads of a temporary nature, etc., it is customary to increase this figure somewhat, say to 55 or 60 sq. ft.

One prominent heater manufacturer who has had a long experience uses the quantity of 67 sq. ft.

How Would You Answer This Question?

A prospective purchaser of an oil burner advises that he is using an average of ten tons of 13,000 Btu. coal per year; how much would 30 degree oil cost him at 4 cents per gallon, and how would it be likely to compare with coal at $13 per ton?

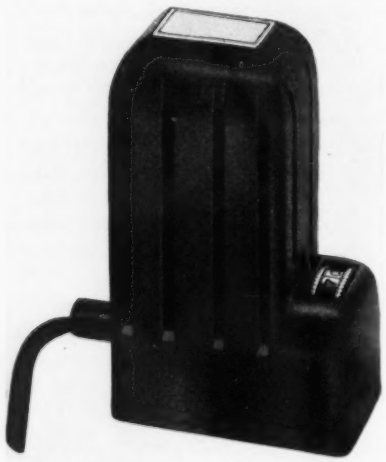
Answers based upon your experience, and suitable, will be paid for and published in the October issue.

ITEMS FOR STORE, SHOP AND JOB

THE Store, Shop and Job section is resumed in this issue. The thirty-two page selling section in our June issue and the thirteen-page section in our July issue took the place of it for those months. Here are a surprising number of additional new developments. Some of them are for your own use. Those featured for customers have been designed to be salable at this time. All have a particular appeal.

Room Temperature Control Air Valve

A new room temperature control combined with an air valve for use in connection with one-pipe steam jobs has just been announced as available on the market. It is, first of all, an air valve, but it is also a room temperature control valve. The dial indicator, seen at the lower

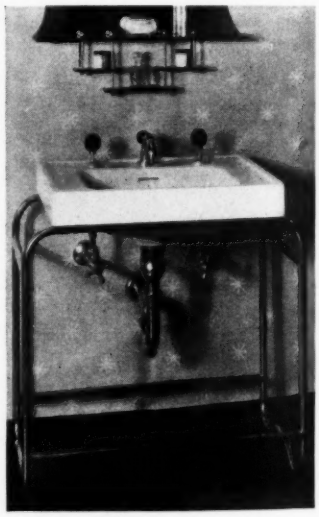


right in the accompanying illustration, can be set anywhere between 60 deg. Fahr. and 80 deg. Fahr. As an explanation of how it works, suppose the dial is set at 72 deg. Fahr. As soon as the room temperature reaches 72 deg. Fahr., no more steam is permitted to enter the radiator. Extra steam is blocked off by a barrier of air inside the radiator. As the temperature in the room drops, part of the barrier of air is thermostatically released from the radiator in order to permit the entry of more steam, until the temperature again becomes the desired 72 deg. Fahr. This constant adjustment is automatic and maintains the temperature as set on the dial.

The Dole Valve Co., located at 1913 Carroll Ave., Chicago, is the manufacturer.

New Lavatory Design Is Introduced

An announcement has just been made of a new lavatory which has been designed to be destinctively modern. The side rails are made to serve as towel bars. The bottom rail has been raised to provide ample foot room for the one using it. The tubular supporting frame is finished in chromium while the lavatory proper is a vitreous china slab. The ball-fittings are fluted and are designed to harmonize with the entire fixture.



Standard Sanitary Mfg. Co., P. O. Box 1226, Pittsburgh, makes the item.

Power Adapter for Threading Pipe

A power adapter has just been announced. It is a worm-driven die stock using interchangeable die heads to thread all sizes and kinds of pipe from ½-in. to 2-in.

Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

MALLEABLE·IRON·FITTINGS

The difference between an old house and a new one is *good* plumbing. We have added the word *good* for a reason. Just any plumbing won't help matters. Good equipment is as necessary to plumbing as plumbing is to the house. The fundamentals of good plumbing are good pipe and good fittings. M.I.F. Fittings have proven themselves time and again capable of rendering the highest service.

Use M.I.F. Fittings on ALL your modernization jobs.

M|F

MALLEABLE · IRON · FITTINGS · COMPANY, BRANFORD, CONN.

Midsummer makes the shower bath popular

You'll profit by selling these *improved* CRANE showers

MIDSUMMER is the time to sell showers. The cool comfort that they bring is the best heat relief. The invigorating bath after work or exercise washes away fatigue. They are time-saving during the morning rush for the office. And no bathing method is so sanitary as the shower, with its cleanly flow of running water that leaves the skin glowing.

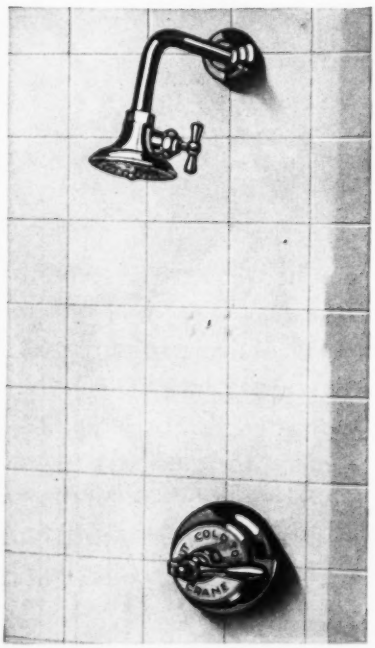
Here are three improved Crane showers at prices lower than have ever before been offered for such high quality. Every home without a shower would like to have one of them. You can profit by selling them. Write for full information.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO
NEW YORK: 23 W. 44TH STREET
Branches and Sales Offices in One Hundred and Seventy Cities

Concealed Compression Shower C4400-B

1. Supply valves with heavy bodies and large areaways, permitting generous flow of water to the head.
2. Renewable seats.
3. Swivel discs.
4. Stem threads in centerpiece permit replacing all operating parts without removing valve body from wall.



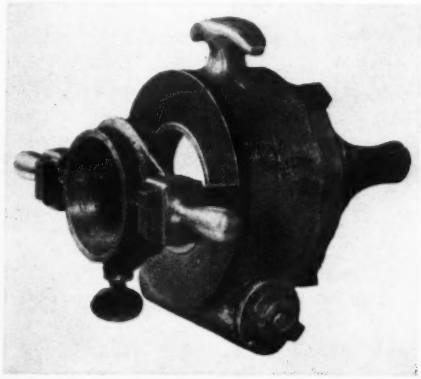
Concealed Mixing Valve Shower C4379-A

1. Union bonnet connection extending beyond face of wall prevents possible leakage in wall.
2. Internal working parts can be repaired or replaced without removing valve body from wall.
3. Renewable seats.
4. Cold water flows as valve is opened. Full range of temperature obtained with three-quarter turn of handle.

Exposed Mixing Valve Shower C4450-F

1. Renewable seats.
2. Cold water flows as valve is opened. Full range of temperature obtained with three-quarter turn of handle.

It is operated by means of a ¾-in. heavy duty electric drill. A compressed air drill may be used if desired. It is of aluminum construction and weighs 17½ lb. On the rear, it has a self-centering chuck to hold it squarely and



firmly on the pipe. The drive is double ended to enable cutting right or left hand threads and to back off by power. A driving socket to fit an electric or an air drill chuck is supplied with each adapter.

It is manufactured by the Borden Company, Warren, Ohio.

New Sill Faucet On Market

The accompanying illustration shows a new sill faucet which is made with a 45-degree spout. It is designed to make more easy the matter of attaching a garden hose to it. It comes in ½-in. and ¾-in. sizes with a polished

or rough non-polished bonnet on a rough non-polished body. Loose key or wheel handles are available.

It is manufactured by the Enterprise Brass Works, located at Muskegon, Michigan.

Oil Burner and Boiler Combination

A new oil burner and boiler combination has been announced. It has been designed for use primarily in homes. It comprises a boiler, burner and control designed and manufactured as one unit, for heating in winter and automatically heating domestic water throughout the year. The maximum output is 257,000 Btu. per hour.

The lower part of the unit houses the boiler and the combustion chamber. In the upper section, carefully insulated from the lower, are the controlling devices and the oil burner mechanism. The oil burner nozzle and the electrodes project down into the combustion space

through sealed openings. The finely divided particles of oil are blown from the nozzle under air pressure and are directed towards the bottom of the boiler. A small amount of air, fed in around the nozzle, cools the nozzle and the electrodes and starts the combustion some distance below the nozzle. The greater part of the air supply is taken from the blower of the oil burner through a duct at the left side of the boiler and enters the bottom of the combustion space, directed upwards.

The path of the flame is down the center of the combustion chamber, mush-rooming out where the secondary air is encountered and passing up all along the walls in contact with the hot refractory lining. Thus the length of the combustion path is nearly twice the length of the chamber. The boiler is designed for the down-draft, counter-flow principle. The products of combustion, after passing to the top of the combustion chamber, sweep through a short lateral pass and down over the boiler tubes. The gases pass out to the stack through a chimney

connection at the bottom of the boiler. A hot water heating coil, built as an integral part of the boiler, heats water for domestic use.

Number three, heavy domestic fuel oil is specified.

The control and the oil burner unit are mounted above the boiler and are enclosed under a tightly fitting cover. Air is drawn into this space through louvres in a duct at the right side of the boiler to draw any traces of oil vapor into the blower and eliminate oil odors. The cover also is designed to insulate noise.

It has been designed to be applied to both steam and hot water heating installations. In the latter case, a circulating pump is specified. This is to provide quick heat response in heating and to prevent the water from circulating to the heating system in summer when the operation is for domestic water heating only. It may be applied also to warm air heating installations through the use of a heat transfer surface, supplying heat to the circulated air. This supplementary equipment is in the form of an air conditioning unit made by the same manufacturer. With this arrangement, it is possible to locate the boiler wherever convenient.

It is made by General Electric Co., 120 Broadway, New York, N. Y.

A New Water Closet Is Announced

A water closet is announced and is described as having a number of new features. The tank is bolted directly to the bowl with bolts not exposed to water. The back of the tank is glazed so that it can be placed anywhere in the room. When the seat lid is raised, is fits in the depression in the front of the tank, thus permitting the front of the closet to be closer to the wall. The rubber ball rests on a seat in the bottom of the vitreous china tank. The overflow chamber is of china made integral with the tank. Before clamping the bowl and tank together, a one-half inch adjustment is provided. The tank can be entirely drained of water by holding the tripping device open. It is designed so that should the bowl become clogged, nothing can enter the tank because the bottom of the rubber ball is above the top level of the bowl.

The manufacturer of this combination is the Peerless Selling Co., Evansville, Ind.

Makes Two-Ply Stainless Steel Sheets

A two-ply, stainless steel, which among other uses is adapted for plumbing, heating and air conditioning installations, has just been announced. The manufacturer is the Ingersoll Steel & Disc Co., Chicago, a division of the Borg-Warner Corporation.

This metal gives a stainless steel face and a carbon steel back. It is rolled from one ingot, manufacturing being done at the company's New Castle, Ind., plant. Its producers plan its use in such work as heating and ventilating ducts, fans, unit heater and air washing and humidifying appartus. The steel can be deep drawn, stamped, welded, formed and polished.

A TWO-COLOR SALES IDEA FOR YOUR USE

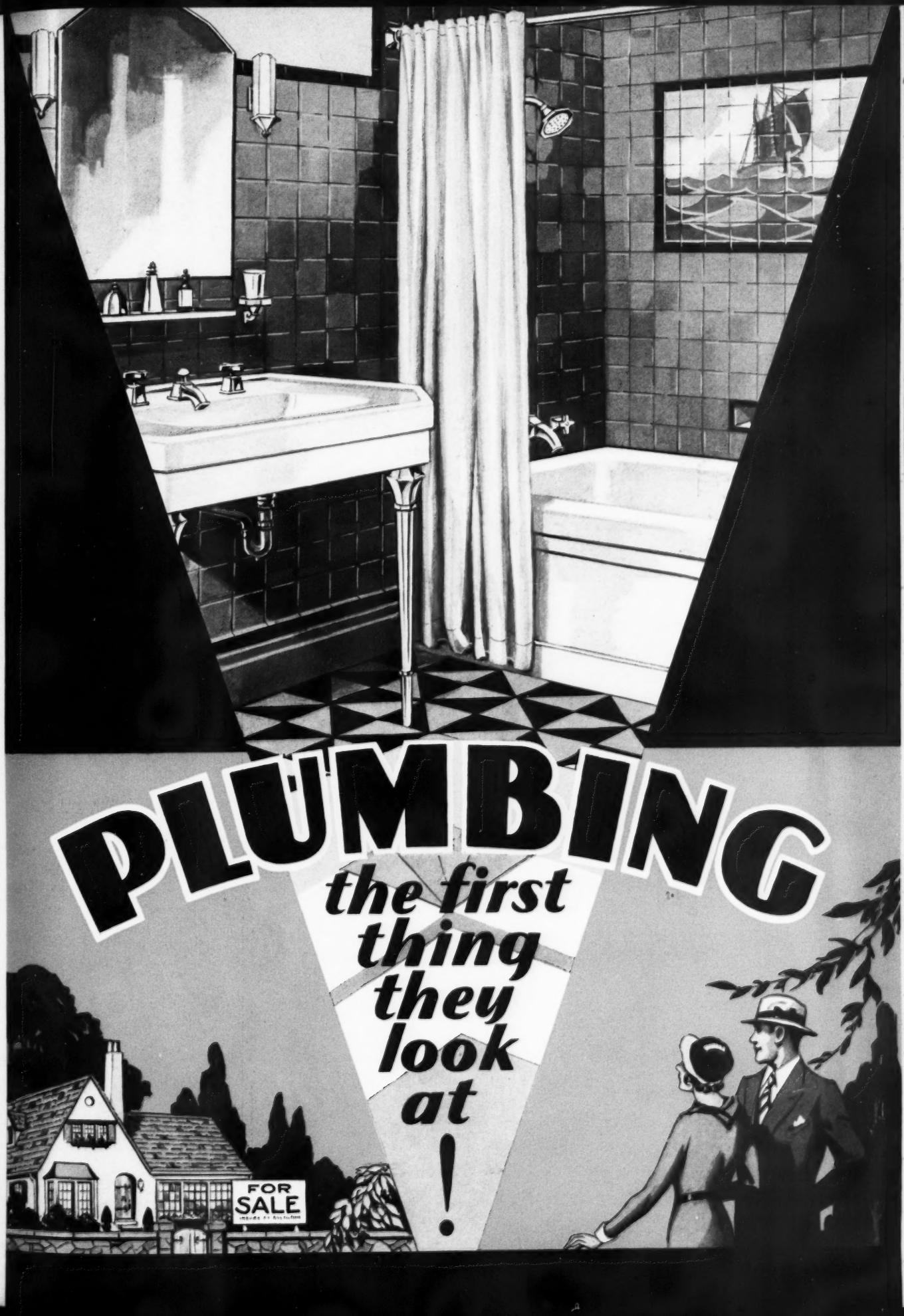
ON the facing page is a new and useful editorial service for every reader of Domestic Engineering. This specially drawn, two-color advertisement carries a timely sales message of value to every dealer. On the reverse side is a duplicate advertisement as far as timeliness and value is concerned, but devoted to heating.

These advertisements are prepared to help the readers of Domestic Engineering. Advertising is becoming more and more the object of study by the dealer. For his purposes, he needs timely and persuasive sales messages, prepared by men who understand the plumbing and heating business. It is to help this dealer with advertising which fits his particular needs, that we have inaugurated this new editorial service.

These advertisements are drawn for us by artists who handle nationally known advertising accounts. The ideas back of the service are suggested by the editorial staff of Domestic Engineering, based upon work in the field in checking what sales messages are effective. You as a dealer will thus find in this feature the way to keep your advertising fresh and up-to-date with the added assurance that it is expertly prepared with the needs of the plumbing and heating dealer in mind.

Dealers in plumbing and heating products are using all forms of advertising. This includes direct mail, newspaper and window posters. The ideas given in this new editorial service are offered for the use of the dealer to aid him in any form of advertising which he employs. Attracting customers into your store and drawing their attention to the services you can give them, is necessary to your business growth.

The ideas on the facing and following pages are for the service of our reader.

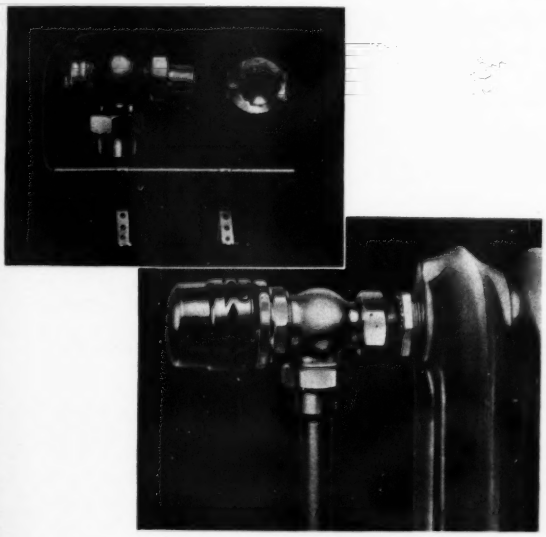

PLUMBING
the first thing they look at !
FOR SALE

100
90
80
70
60
50
40
65 70 75 80 85
Comfort
at Your
Finger Tips
You Get It With Automatic
Heat and Save Money
Too!

Radiator Valves for Individual Room Temperature Control

The two illustrations below show radiator valves which just recently have been placed on the market for individual room temperature control. The lower illustration shows the valve for exposed radiation. It is described as being able to simply replace the ordinary radiator valve in most cases. Accordingly, it is adaptable, not only to new buildings but to structures now in existence. The thermostatic member is a liquid-filled bellows. Heat expands the liquid which moves the valve, throttling the steam flow toward the closed position. Cold contracts the liquid, thus opening the valve. The thermostatic member is constantly exposed to the air of the room, but is insulated from the valve body. The housing is designed to prevent tampering or probing with it. The temperature range is set at the factory from 60 deg. Fahr. to 90 deg. Fahr. Intermediate temperatures may be obtained by turning the valve head. Once set, the head may be locked against tampering or accidental change. The 60 deg. Fahr. low limit is designed to guard against freezing.

The model at the upper left is for use with enclosed radiation. Control is provided at two points by two bulbs

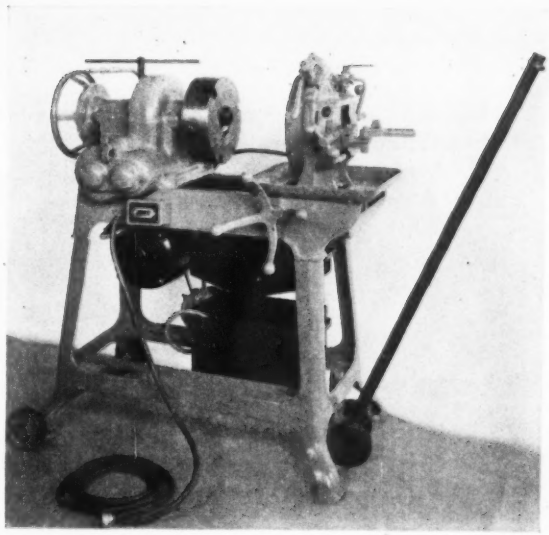


separate from the steam valve proper—first, at the cool air inlet at the bottom and second, at the heated air outlet at the top of the enclosure.

It is manufactured by the Fulton Sylphon Co., Knoxville, Tenn.

Automatic Self-Opening Die-Head

The illustration at the top of this page shows a die-head which has been designed to be automatic, self-opening and quick setting. The entire machine is portable and is for pipe and bolt threading. It requires two sets of dies to thread all sizes of pipe from ½-in. to 2-in. inclusive; one for ½-in. and ¾-in. and the other for 1-in., 1¼-in., 1½-in., and 2-in. The die-controlling cam ring carries a notched segment, each notch in which corresponds to and is marked for a given setting of the dies. The notched segment is engaged by a pawl so that, as the cam ring is rotated under it, it engages first one notch and then the next and the next, until the correct one is reached and the pawl, engaging it, locks the dies in the exact position required to produce that size of thread. When a standard length of thread is to be cut, a spring plunger is depressed before the dies are set. Then, when the full length thread has been cut, the plunger trips the pawl, the dies open and the pipe is free to be removed from the machine.



This item is manufactured by American Die & Tool Co., Reading, Pa.

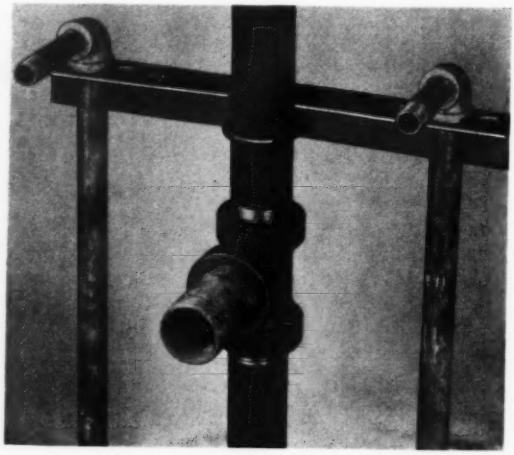
Spray Attachment for Garden Hose

Here is a spray attachment for a garden hose which just recently has been announced on the market. The sprinkler is a new device, similar in its construction to a tire valve and is built into the wall of the hose. As shown in the illustration, the spray head is held upright

by a metal support slipped over the spray head. The flow of water is regulated or is shut off entirely by turning the screw head. If the spray becomes clogged with foreign matter in the water, the head can be removed,

cleaned and replaced. It has been designed so that on a 50-ft. length of hose, with four sprinklers built into it it will sprinkle from 700 to 1,000 sq. ft., depending upon the water pressure.

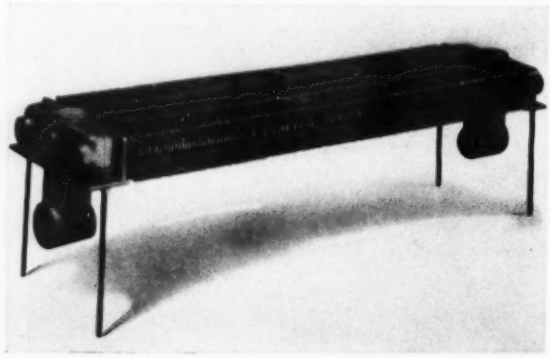
The Diamond Rubber Company, Inc., of Akron, Ohio, is the manufacturer.



A Roughing-In Pipe Support

The device described here is designed to hold supply pipes firmly in place in order to preserve roughing-in dimensions and to facilitate the installation of fixtures after the plastering and other trades have completed their work.

It is manufactured by Healy-Ruff Co., 765 Hampden Ave., St. Paul, Minn.



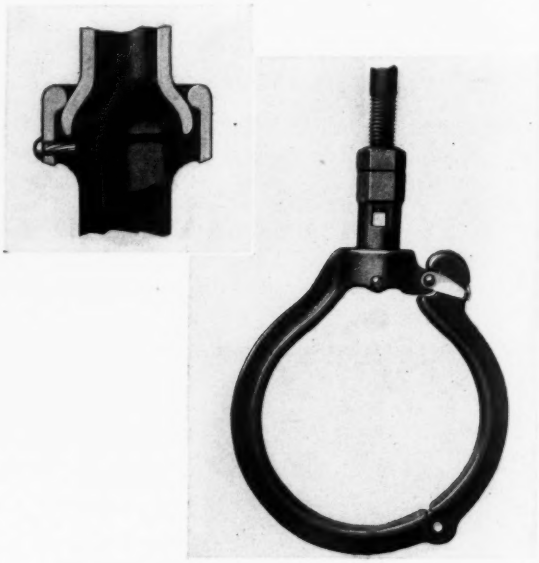
A Built-in Fin Type Heater

An announcement has been made of a built-in heater of the fin type. It is shown herewith. The header has been designed with the idea in mind of making it fit all standard types of valves and traps. Eccentric connections are provided for drainage purposes. The round metal legs attach to the headers and are threaded so as to permit adjustments, thus providing pitch or grade.

The manufacturer is Commodore Heaters Corporation, 11 West 42nd Street, New York, N. Y.

A Ball-Swivel Pipe Hanger

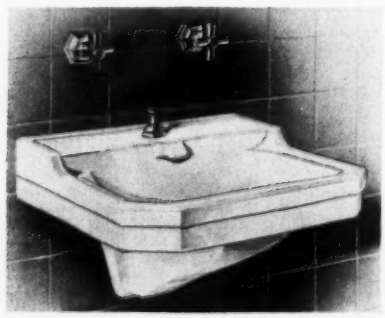
There has just been placed on the market a line of adjustable ball-swivel pipe hangers. As shown in the illustration, the ball and socket joint provides flexibility and allows the ring to swing in any direction, in order to compensate for expansion and contraction of the pipe line and for irregularities of alignment. The construction permits the swivel to be turned on the threaded suspension bar to obtain vertical alignment. A locknut maintains this. Special features are in the method of supporting the load and in locking the hinged arm.



The Grabler Mfg. Co. of Cleveland, Ohio, is the manufacturer.

A New Integral Trap Lavatory

Here is a new integral trap lavatory. The fixture is bolted flush against the wall. The integral trap is designed to give it extended bearing surface. The waste is held open by a ball catch on the lift rod, so designed to prevent the plug from falling of its own accord. The supply spout is above the rim of the bowl. The Trenton Potteries Co., Trenton, N. J., is the manufacturer.



The FIRST STEP TO PIPING ECONOMY

All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth, glistening surface or metallic luster characteristic of good galvanizing practice.

Whatever value may be put into your piping system by intelligent planning and good workmanship, its ultimate usefulness will depend largely upon the choice of the pipe. For, if replacements are necessary they will involve more than repetition of the original cost. The first step to piping economy, therefore, is in choosing pipe that will last.

NATIONAL Scale Free Spellerized Pipe (butt-weld sizes ½ to 3-inch) is steel pipe of the highest excellence, from which mill-scale has been removed by special treatment, to minimize corrosion, especially "pitting". Both surfaces, inside and out, have been made clean and smooth, in order that no enemy of good metal may find lodgment there.

Actual, exact observation has revealed that pipe to which the Scale Free and Spellerizing processes have been applied, is far less subject to corrosion and more immune to deterioration, in general, than pipe of less homogeneous material or pipe not scale free.

You adopt the first step in piping economy when you specify NATIONAL Scale Free Pipe—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · PITTSBURGH, PA.

Subsidiary of United States Steel Corporation

NATIONAL SCALE FREE PIPE *SPELLERIZED*

DEPARTMENT OF COMMERCE BUILDING « « « « BUREAU OF INTERNAL REVENUE

WASHINGTON, D. C.

EQUIPPED WITH SLOAN FLUSH VALVES

ARCHITECTS
YORK & SAWYER . . . . . NEW YORK, N. Y.

GENERAL CONTRACTORS
CONSOLIDATED ENGR. CO. . . BALTIMORE, MD.

FIXTURES
STANDARD SANITARY MFG. CO. . . PITTSBURGH, PA.

JOBBERS
HORNE-WILSON, INC. . . . . ATLANTA, GA.
NOLAND CO. . . WASHINGTON, D. C. (Flush Valves)

PLUMBING CONTRACTORS
LOFTIS PLBG. & HTG. CO. . . . . ATLANTA, GA.

ACTING SUPERVISING ARCHITECT
J. A. WETMORE . . . . TREASURY DEPARTMENT
WASHINGTON, D. C.

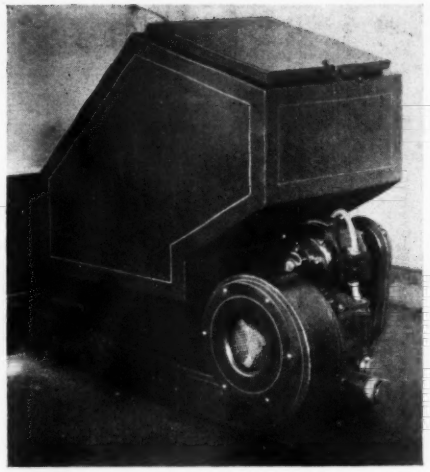
GENERAL CONTRACTORS
JAMES BAIRD CO., INC. . . WASHINGTON, D. C.

FIXTURES
STANDARD SANITARY MFG. CO. . . PITTSBURGH, PA.

JOBBERS
E. G. SCHAFER CO. . . . . WASHINGTON, D. C.

PLUMBING CONTRACTORS
W. G. CORNELL CO. . . . . WASHINGTON, D. C.

SLOAN VALVE CO » CHICAGO



New Features in Coal Stoker

An automatic air control is the new feature which has been built into the stoker shown in the accompanying illustration. It has just been announced. The stoker uses the underfeed method of firing. The control has been designed so as to supply air automatically in the correct amount which will cause all of the combustible gases to be burned completely. This precludes the possibility of there being any smoke insomuch as smoke is a result of insufficient air and incomplete combustion. It is for installation in steam, hot water and vapor systems and the fuel retort has been designed to take the place of regular grates without further changes in the plant.

The manufacturer is the Will-Burt Co., Orrville, Ohio.

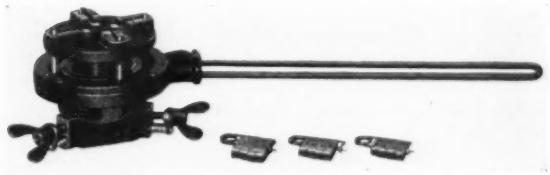
Room Cooler Which Uses Ice

The room cooler which is shown in connection with this description has just been placed on the market. It consists of an ice storage cabinet and an electric blower. When charged with ice, the blower circulates the cooled air into the room. An air deflector is provided to control the direction of the air stream. It is stated that under hot-weather conditions, the two-section ice fan will melt about 20 lb. of ice per hour, and that the temperature of the air delivered will be lowered 25 degrees. One, two or three ice container sections can be used. Each has a capacity of 75 lb. of ice. In the top is the blower. The ice sections may be carried individually to the nearest drain for emptying the water, and recharging with ice.

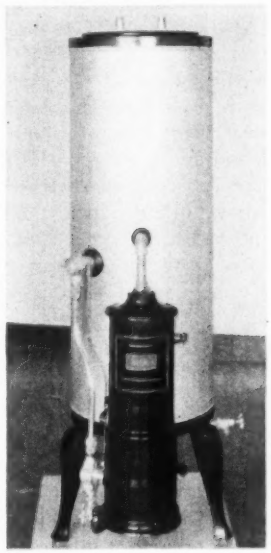
Modine Mfg. Co. of Racine, Wis., is the manufacturer.

Improved Pipe Threader

The accompanying illustration shows a die head of new design with a new type pipe holder. The large wing-head thumb screws with special guide



bars are designed to facilitate the centering of the tool on pipe from 1 in. to 2 in. in size. The manufacturer is The Toledo Pipe Threading Machine Co., 1425 Summit street, Toledo, Ohio.



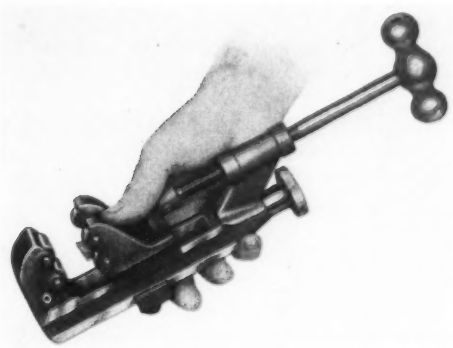
Heater Stands High Pressure

A tank which has been tested to withstand a hydrostatic pressure of 400 lb. per sq. in. is a feature of a new automatic storage water heater that has just been placed on the market for domestic use. The tank is made of monel metal and it comes in six sizes and capacities.

The item is being manufactured by The Whitehead Metal Products Company, Inc., 287 Spring Street, New York City.

Cutter for Brass

A new tool has been placed on the market for cutting brass pipe or tubing and electrical conduit. It is designed to make a square and clean cut. The cutting tool can be resharpened. It is manufactured by The Lorraine Cutter Mfg. Co. of Holyoke, Massachusetts.



Remodeling —

(Continued from Page 53)

fine residences, and in offices used by executives who spend part of their time in the factory and want a shower before going home in the evening.

Oil burner, gas boiler and burner and stoker sales have developed among plumbing and heating contractors a number of very ingenious sales ideas. For example, one eastern firm had been in business for about forty years when it took on an oil burner. After some work had been done and a number of installations made a map of the city was procured. Colored pins were placed on the map for each of those early installations. Then the neighborhood around each of those installations was carefully and thoroughly gone over, and the satisfied customer used as reference. The firm called this their "battle map," and it was found that the resulting effort was far more systematic, productive, and less costly, because they could capitalize on the installations already made in the various neighborhoods.

Perhaps, under changing conditions, contractor-dealers in our field will find it necessary to be willing to submit themselves to the kind of test which one successful merchandiser demands of himself and his products. The writer stood in his place of business one day and listened to the presentation by a salesman of a new product. The contractor thought for a moment. Then he said: "Send me one. I'll put it on my display floor here, for sixty days. If I can't sell it in that time, I won't want it in my stock."

THINKING SYSTEMATICALLY

Here is the way one mid-western contractor has laid out his sales job, in order that he might go about it systematically and with no lost motion:

1. Determine property owners and classify as to those living in homes and otherwise.
2. Classify renters according to type of home they occupy and financial responsibility.
3. Divide entire city into zones and then classify zones as above.
4. Start mailing list for series of letters.
5. Pick out districts first that contain the better class which demands conveniences.
6. Newspaper advertising regularly, to correspond with the idea carried in letters.
7. Personal call on prospects first as mentioned in paragraph five. Then follow through in zones.

Then as to the individual prospect—and this list was made up with reference to a successful sales plan for oil burners:

1. Learn about your prospect as to habits, hobbies, etc., to win his attention.
2. You must know your prospect thoroughly and be sold yourself to speak convincingly and sincerely.
3. Know something about heating methods.
4. Know that you are selling a necessary convenience and not a luxury.
5. Don't expect sales at your first audience.
6. Be able to close your contract after you have sold the idea. The time for this is when you have completed your talk with a demonstration.

We give this space to these ideas because any sizable remodeling sale results from a final personal interview, and it is of value to the contractor to be able to think systematically and clearly about such interviews.

One of the very best ways in which to sell anything is to put yourself in position to prove its value to the prospective buyer. That is why the "neighborhood" campaign described above was successful. But this sort of thing may be carried much further. One contractor has been keen enough to realize that a knowledge of the after-effects of certain types of remodeling jobs would be of value in his selling. He specialized in remodeling older types of buildings, with their large rooms, into smaller apartments, with the necessary added plumbing or heating. He can cite case after case, with the figures, to show the increased rentals, the net profit in the increase, and what had been added to these buildings in capital value, based on increased income.

DEALERS USED THESE SALES LETTERS

We show several sales letters, and some pieces of advertising copy, which have been used by plumbing and heating contractors who have been active in the modernizing field. They suggest lines of appeal which may be used by others to their profit.

Principally, however, the purpose of this article is to urge the viewpoint that there is something that every contractor-dealer can do to create sales—now. It is being done, and the ideas that have produced business in the past will do so today—the only need being that sales efforts must be more carefully and accurately directed. The two stories related at the opening of this article should be clear illustrations of what can be done when a dealer faces his job squarely. A man can't just sit by and do nothing—and if what he does is carefully thought out and energetically put through, the dealer will find it a most satisfactory substitute for bemoaning the "good old days."

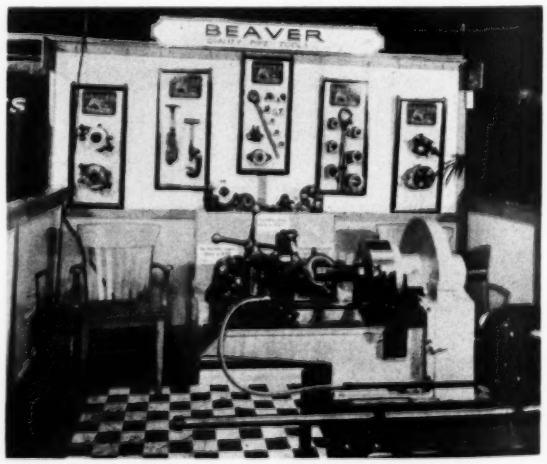
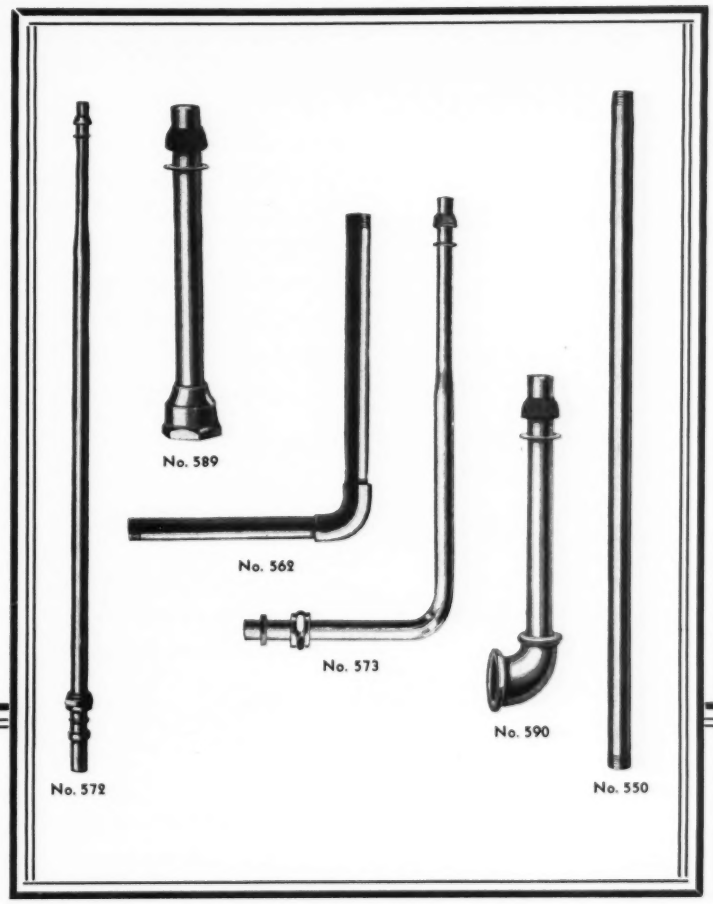


Exhibit of the Borden Co. of Warren, Ohio, at the Second International Heating and Ventilating Exposition



THERE IS A *Standard* IN EVERY LINE » » IN *Brass Goods* IT SHOULD BE THE American LINE

Too much care cannot be exerted in selecting the line of brass goods by which your reputation will rise or fall.

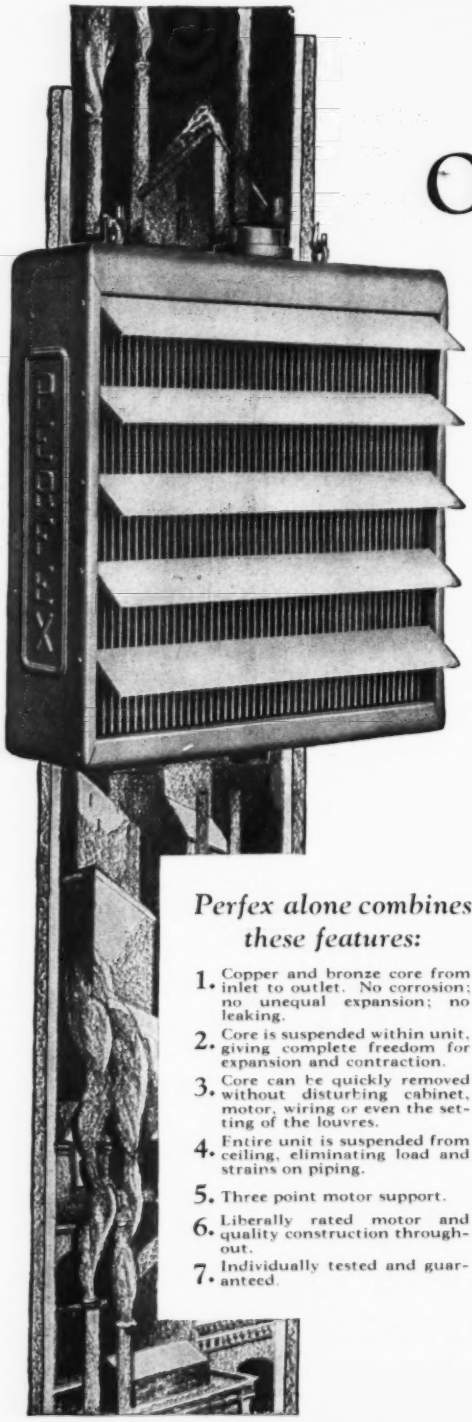
In the AMERICAN Line, both in construction and appearance, you will meet the requirements of the most careful buyers, and with such a measure of satisfaction, as to be productive of future business.

In the manufacture of the AMERICAN Line it has become a habit of giving something just a little better in workmanship and design, something just a little different than the ordinary line of brass goods.

Write for the AMERICAN story, and adopt as your *standard*, the AMERICAN Line.

AMERICAN SANITARY MFG. CO., ABINGDON, ILLINOIS

American QUALITY



One More Proof of Perfex Leadership

EVERY engineer knows that you can't compromise with expansion and contraction—that you can't overcome it—that you must *provide* for it.

Yet how many unit heaters actually make *adequate* provision for all expansion and contraction strains?

Perfex *does.* The core is suspended from the top within the unit in such a way that it has *complete freedom* to expand and contract without strain under all possible conditions. Moreover, the use of copper and bronze throughout the core insures *uniform* expansion and contraction throughout.

That is *one* reason—an *important* reason—why so many engineers and contractors are installing and specifying the Perfex Uniheat. Other equally important advantages are listed opposite.

Have you the Perfex engineering data-book?

Perfex alone combines these features:

1. Copper and bronze core from inlet to outlet. No corrosion; no unequal expansion; no leaking.
2. Core is suspended within unit, giving complete freedom for expansion and contraction.
3. Core can be quickly removed without disturbing cabinet, motor, wiring or even the setting of the louvres.
4. Entire unit is suspended from ceiling, eliminating load and strains on piping.
5. Three point motor support.
6. Liberally rated motor and quality construction throughout.
7. Individually tested and guaranteed.

PERFEX CORPORATION
(Heating Division)
MILWAUKEE, WISCONSIN

"Heat Radiation Specialists for Over Twenty Years"

PERFEX UNIHEAT

Also manufacturers of:
Concealed convection heaters of advanced design and construction.
Process cores for all types of pre-heating and process work.

The group picture of those in attendance at the Rochester meeting

Discuss Re-Inspection of Plumbing at Annual Meeting of A. S. S. E.

THE twenty-seventh annual meeting of the American Society of Sanitary Engineering was held in Rochester, N. Y., Aug. 2-5, with headquarters at the Seneca Hotel.

Outstanding features were the paper by Jos. J. Crotty and the discussion of the report of the Conference on Cross Connections, held in Washington, D. C., in February. Mr. Crotty's paper was titled, "Periodic Re-Inspection of Plumbing." It advocated that the plumbing inspection department be under the jurisdiction of the Board of Health and that there should be regular re-inspection of all plumbing installations, as they would help eliminate and rehabilitate slums in cities, and provide better living conditions.

A. R. McGonegal of Washington, D. C., presented the Committee's Report of the Conference on Cross Connections.

The report was discussed, section by section, and except for a few instances approved as read. Most of the changes made were in the wording of various phrases, so as to clarify them and remove all doubt as to their meaning.

The Rochester convention committee—Front: William M. Lawn, assistant general chairman; E. L. Miller, secretary, Rochester Master Plumbers Association. Rear: H. B. Driscoll, L. Gresens, Bert L. Paulus, members of the convention committee; Thomas Connelly, general chairman; Timothy Downs, member of the committee

The election of officers resulted as follows:

President, Thos. M. Dugan, McKeesport, Pa.
1st V. P., Geo. R. Stolz, Milwaukee, Wis.
2nd V. P., Wm. D. Hobro, San Francisco, Cal.
3rd V. P., Edwin W. Cade, Brooklyn, N. Y.
4th V. P., Jas. Smith, Winnipeg, Manitoba, Canada.
5th V. P., W. H. Meadows, Toronto, Ontario, Canada.
6th V. P., F. W. Cloutier, Minneapolis, Minn.
7th V. P., Walter Potter, Mobile, Ala.
Treasurer, J. F. Doud, Cincinnati, Ohio.
Secretary, J. R. Walker, Waterbury, Conn.
Director, Chas. I. Henderson, Seattle, Wash.
Liason Director, Robt. J. Barrett, Washington, D. C.

Just before the close of the meeting, the officers present were duly installed by Past President Jos. J. Crotty.

It was stated by Messrs. W. C. Groeniger, Jos. J. Crotty and others that the Society had made a worthwhile move when it had become affiliated with the American Standards Association, last January.

The opening session was called to

Thomas M. Dugan, McKeesport, Pa., re-elected president of the society

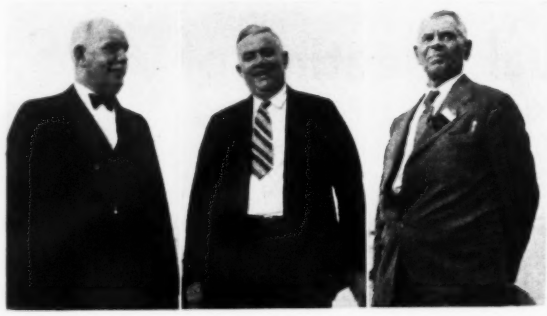
order by John F. De Young, Assistant Plumbing Inspector of Rochester.

Following the invocation and addresses of welcome, Mr. De Young turned the meeting over to Thos. M. Dugan, president of the society. Mr. Dugan reviewed briefly the history of the Society and its aims and ambitions.

Wednesday's session was opened with the presentation of the president's report by Mr. Dugan himself.

President Dugan appointed the following convention committees:

Resolutions — Geo. J. Dehn, Chairman; Richard McLaren, Thos. H. O'Neil, W. Keith McAfee, W. C. Groeniger, and Thos. English; Press — Jas. R. Walker, Chairman; W. F. McDonald, C. A. Hill, M. Halloran, and John Mills; Auditing —Thos. J. Lee, Chairman; Geo. Stolz and L. J. Devine; Nominating—W. R. Miller, Chairman; Edwin Cade, J. R. Walker, Chas. Hallgring, and Albert Disseroth; Convention City—Walter Smith, Chairman; Jas. Arthurs, Timothy Downs, W. E. Mathesin, and Norman Boosey; Memorial—L. A. Cornelius, Chairman; W. H. Meadows, and Thos. English; Sergeant-at-Arms—H. S. Winterhalter; Reading Clerk —M. W. Smith.



James R. Walker, Waterbury, Conn., re-elected secretary and librarian; Robert J. Barrett, Washington, D. C., vice president N. A. M .P. and liason director, A. S. S. E.; George R. Stolz, Milwaukee, Wis., re-elected first vice president

REPORTS PRESENTED

J. R. Walker, Secretary, presented his report, which showed seventeen applications for membership, fifteen active and two associate. Mr. Walker, who is also Librarian, presented his report for that office. Treasurer J. F. Doud reported funds on hand totaling $2,160.41.

W. C. Groeniger reported for the American Standards Association Committee—Committee A-40. This Committee A-40 has eight sub-committees, covering the following: No. 1, Plumbing Codes; No. 2, China Plumbing Fixtures; No. 3, Porcelain Plumbing Fixtures; No. 4, Cast Iron Enamel Plumbing Fixtures; No. 5, Traps; No. 6, Plumbing Brass; No. 7, Copper Water Tube Fittings, and No. 8, Cast Iron Soil Pipe and Fittings.

A. R. McGonegal presented the report of Committee B-33, American Standards Association, covering standardization of screw threads for hose couplings.

Reporting for Committee Z-4, American Standards Association, T. M. Dugan stated that all he could report is progress. A. R. McGonegal presented his report as A. S. S. E. Representative on the Council of American Standards Association.

W. C. Groeniger, member of the Research Committee, presented a paper, the title of which was "Manual of Procedure for the Adoption and Enforcement of Laws Controlling Plumbers and Plumbing."

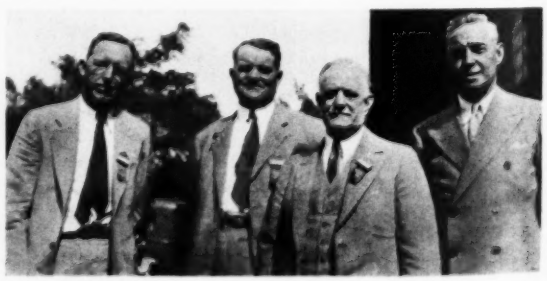
It was a thorough study of the reasons for the need of good plumbing and the proper installation under correct laws and supervision. It touched the question from many angles, showing the definite duty of owners and occupants of buildings, architects, engineers, plumbing inspectors, plumbers, manufacturers and the courts.

It stated that trade protection set up by state or city government is for the protection of the health of the public and not to create business for plumbers.

President Dugan read a paper, "Adequate Sanitary Control of Industrial Pollution of Streams and Other Basis Water Sources," by Edward C. Trax, Bacteriologist, City Water Dept., McKeesport, Pa.

"The Evolution and Improvement in the Water Closet," was the subject of a paper presented by B. O. Tilden, President, B. O. T. Mfg. Co. It covered the advancement in the manufacture of water closets and was illustrated by slides, showing water closets from old Roman days to the present day equipment.

W. C. Groeniger delivered a paper on water closets

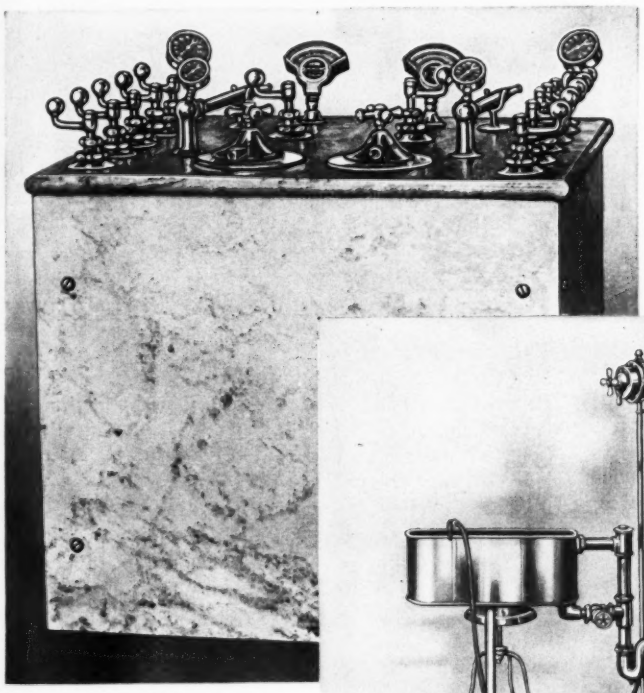


W. Keith McAfee, Universal Sanitary Mfg. Co.; William C. Groeniger, Columbus, O., past president; Joseph J. Crotty, Central Foundry Co., past president; R. L. Ottke, Standard Sanitary Mfg. Co.

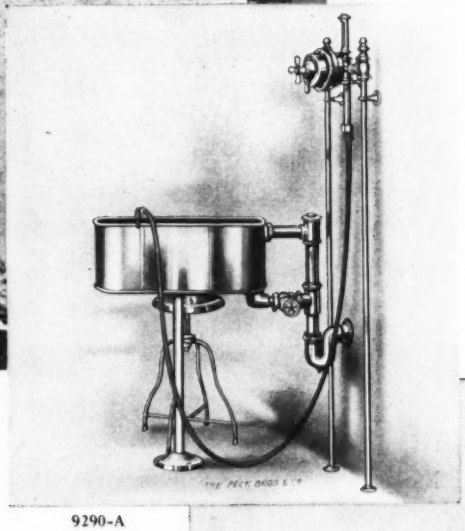
for Hospital Work ~don't bid on price bid on Quality

A quality bid will win many times over a price bid for hospital work where, of necessity, equipment must be measured by the highest of standards.

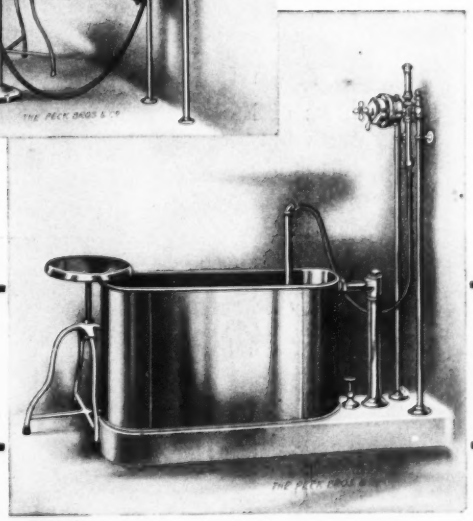
The control table, arm bath and leg bath shown are only part of the unusually complete Peck line of hydrotherapeutic appliances. These products have proven again and again their ability to withstand long, hard service and their usage in some of the country's finest and most modern hospitals is evidence of the dependence placed on them.



9222-A



9290-A

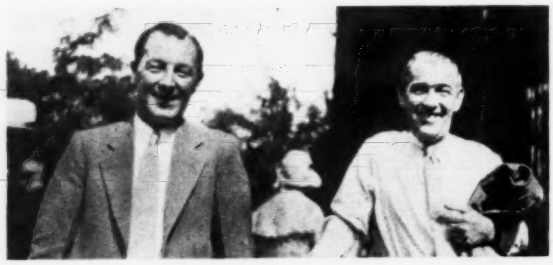


9292-A

Peck's Better Brass Builds Better Business

THE PECK BROS. & COMPANY

127 CHESTNUT STREET NEW HAVEN, CONN.



Edwin W. Cade, new third vice president; Richard MacLaren—both of Brooklyn, N. Y.

and the improvement in their manufacture along sanitary lines.

W. Keith McAfee led the discussion on the two papers on water closets, and a discussion of the ball and smoke tests and other questions pertaining to the aforementioned papers.

"Improvement in Quality and Type of Modern Brass Plumbing Fixtures," was the title of a paper presented by Rudolph Weber, Plumbing Division, Crane Co., Buffalo, N. Y. He also discussed various types of drinking fountains and hospital fixtures.

The discussion on Mr. Weber's paper was led by L. A. Cornelius, Wolverine Brass Works.

C. J. Coleman, manager, Hospital Section, Standard Sanitary Mfg. Co., read a paper, entitled "Adoption of Sanitary Engineering Principles in Hospital Fixtures and Equipment."

In the discussion on the above paper, W. C. Groeniger said he did not believe the manufacturer, plumbing inspector and plumber had taken advantage of the hospital situation. He stated tests should be made to be sure there were no cross-connections in the hospitals.

President Dugan introduced Robt. J. Barrett, Liason Director of the Society, who has been honored by being elected Vice President of the National Association of Master Plumbers. Mr. Barrett extended the greetings of President Kleine of the National Association of Master Plumbers.

A delegation of master plumbers of Buffalo, N. Y., arrived at the meeting and were introduced to the members. Included in the delegation were Past National Secretary Geo. Frank, New York State President Henry Ritter, and New York State Secretary Frank Clucas. Later on a visit was paid by Geo. Drake, Past President, National Association of Master Plumbers.

"House Drainage and Modern Plumbing Designs," was the title of a paper by L. J. Devine, Chief Plumbing Inspector, Elizabeth, N. J.

J. Franklin Skinner, C. E., Chief Sanitary Engineer, Rochester, N. Y., delivered a paper on "Water Supply and Sewage Disposal."

WANTS RE-INSPECTION OF PLUMBING

"Periodic Re-inspection of Plumbing," was the title of the next paper, presented by Jos. J. Crotty, Past President, A. S. S. E., Vice President, Central Foundry Co.

In the discussion on Mr. Crotty's paper on re-inspection of plumbing, C. A. Hallgring, Plumbing Inspector, Newark, N. J., stated that his city is conducting such a campaign at present.

L. A. Cornelius, Wolverine Brass Works, Grand Rapids, Mich., believed the Society should do all possible to sell the idea to the country, strictly on the basis of a health measure.

Col. Carey H. Brown, Executive Secretary, Rochester Civic Improvement Association, presented a paper, "Scientific City Planning of Sanitary Features."

He stated that a city should be planned before it is built, but very few of our cities have been so planned. Washington, D. C., is an outstanding example of a planned city. The paper touched on the planning of traffic conditions, water supply and drainage. It also stated that the planning of sanitary conditions in public parks should be given careful consideration. It covered the varying conditions to be found in sections occupied by private homes and apartment buildings.

"Public Health Benefits Derived from Qualified Master Plumbers Merchandising Plumbing Material," was the title of a paper presented by W. E. Miller, Sanitary Engineer Contractor, Washington, D. C.

(Continued on Page 144)

W. H. Smith, Wilmington, Del., with wife and daughter; George J. Dehn, Compound Injector & Specialty Co., with wife and daughter

AN
EDITORIAL
SECTION
AUTOMATIC
HEAT

AUTOMATIC HEAT SECTION

OPPORTUNITY KNOCKS WITH A BANG!

THIS TIME

A

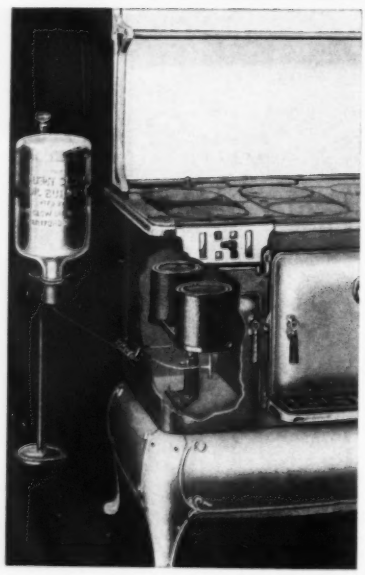
20%

PRICE REDUCTION

ON

SILENT GLOW

RANGE BURNERS



Ask the women of almost any community what range burner is their first choice, and the chances are more will name Silent Glow than any other one make. Over 125,000 of these famous range burners are now in use. Last year, Silent Glow led all other manufacturers in oil burner sales.

Against this impressive background of consumer demand and proven record of salability now comes a sensational announcement. A 20% price reduction on all models of Silent Glow range and stove burners.

Can you recall a time when opportunity has knocked louder?

This price reduction is bound to have a far-reaching effect on Silent Glow sales possibilities. It places Silent Glow burners within the reach of thousands of women who have put off buying solely because of price. It enables you to offer a range burner that has been tested and approved by Good Housekeeping Institute and listed as standard by the Laboratories of the National Board of Fire Underwriters at a price that will bring immediate sales.

In making this reduction, Silent Glow quality has not been lowered one iota. The Model W, for example, is the identical burner which has previously been sold for 20% more.

Progressive dealers located in territories not yet allotted are cordially invited to write for particulars on the Silent Glow franchise. Or better yet, wire.

Three Other Reasons It Pays to Handle Silent Glow—Silent Glow is the most complete line of oil burners on the market; a burner for every purpose. Silent Glow gives you the backing of the largest oil burner organization. Most important of all, Silent Glow dealers make money. Ninety-nine out of a hundred who handled Silent Glow in 1931 are still selling them.

THE SILENT GLOW OIL BURNER CORPORATION
HARTFORD, CONN.

Boston **Chicago** **St. Paul**

Member National Electric Light Assn.
Member American Oil Burner Assn., Inc.

Member Oil Heating Institute
Member Distillate Burner Manufacturers Assn.

In Canada:
SILENT GLOW OIL BURNER CORP., LTD.
162 St. Catherine St., W., Montreal, P. Q.

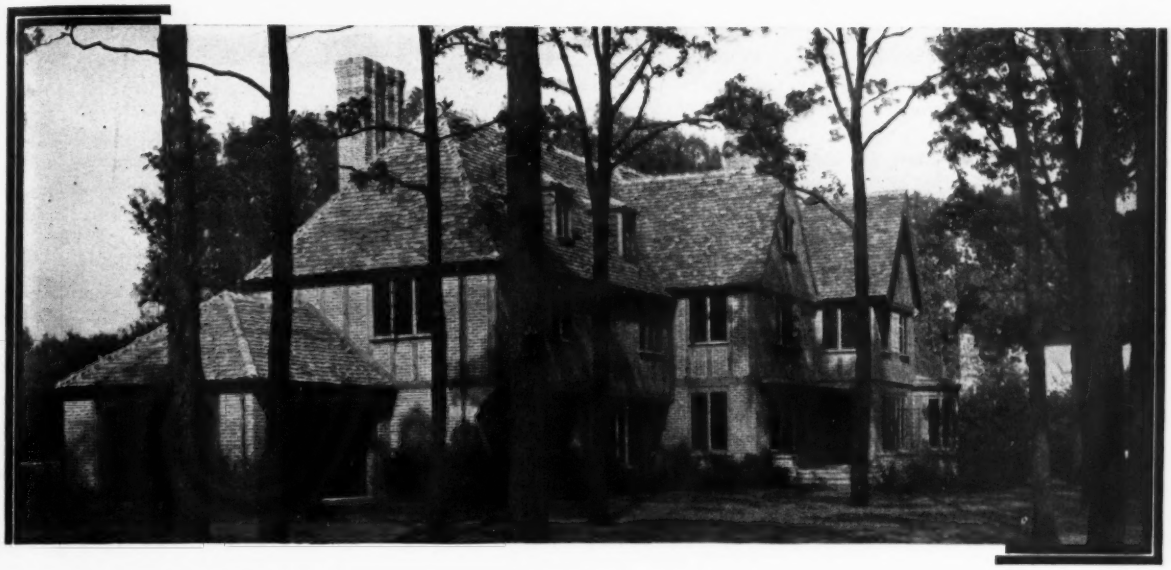


Fig. 1—The Winnetka, Illinois residence referred to in this article is shown above

Two Interesting Temperature Control Installations

Individual rooms are regulated at central points with oil burners supplying heat

IN A certain residence in Winnetka, Ill. (see Fig. 1), the problem was to provide temperature control equipment which would automatically maintain a uniform temperature throughout the house. There are a number of wings and consequently a variation of exposures which precluded the possibility of anything like uniform temperature in the various rooms without some sort of individual room control. The heating was to be by vapor-vacuum system with an oil burner in the boiler and the radiation was figured in the regular way. Another feature of this problem was the desire to remove all valves from the upstairs rooms and to concentrate them in the basement at the bottoms of the various risers.

Electrically-operated and electrically-connected temperature control equipment was used and the valves, thermostats, etc., were located approximately as shown in the accompanying wiring layout. To obtain control for each individual room a thermostat was located in each of the principal rooms on the first and second floors, twelve in all, with the living room having two thermostats because of its size and exposures. Motor-operated valves were installed on the risers serving the radiators in these rooms, in some cases one riser serving all the radiators in the room and in other cases several risers being used to serve the radiators with one or more radiators on each riser. In all cases these valves were located in the basement on the bottom end of the riser and each one was, of course, wired to the proper thermostat in the room served by that riser. By this arrangement, the feed and return lines were hooked into the radiators simply with elbows, which made a very neat and clean-cut appearance.

The automatic control for the burner was used in this installation to make possible individual room control. In this circuit the last valve of the several which are controlled by the thermostat in each room is wired to a relay in such a way as to run the oil burner when any room in the house is requiring heat and shut it off only when all the thermostats are satisfied. The valves in each room are, of course, opened and closed by the thermostat in that room, depending upon whether more heat or less heat is called for by the thermostat. In this way, heat is always available for a room which may need it, but is kept away from rooms that have become warm enough. It is an economical system because the oil burner is kept running only so long as is necessary to supply heat where it is wanted—there is no overheating of eleven rooms in order to get the twelfth warm enough.

The equipment also was used to take care of a special condition in the basement. Two rooms were to be heated from a unit heater placed in the wall between them, and one of the rooms was larger than the other and would presumably take longer to heat up. Consequently, a damper was placed on the outlet of the unit heater leading into the smaller room and a controller for the damper was installed on it under the regulation of a thermostat in this smaller room. A thermostat in the larger room

AUTOMATIC HEAT SECTION

controlled the unit heater. In operation, the larger room calls for heat before the smaller one and is heated more slowly, as mentioned above. Consequently, the unit heater is started by the thermostat in the larger room and starts throwing heat into both rooms if the damper into the smaller one is open, otherwise it throws heat into the larger room. When the smaller room has come up to temperature, the thermostat there shuts the damper and the unit heater continues to throw heat only to the larger room until the thermostat there is satisfied, when it shuts off.

A SECOND JOB DESCRIBED

The wiring throughout is for low-voltage operation. Three-conductor wire connects the thermostats and valves and two-conductor wire is run between the valves and the power source and to the relay controlling the oil burner. All this wire is pulled through ½" conduit for neatness of installation and physical protection of the wire.

In a second residence located in Rockford, Ill., the problem was much the same as in the Winnetka residence, namely, to provide a system of temperature control which would make it possible to regulate and separately maintain the temperature of each room of the house. However, the problem was somewhat different in the Rockford house because of the fact that it was a completed building which had been occupied for several years. The oil burner in the boiler was of the high-low flame type, instead of an on-off burner. The solution was found in the use of the same automatic control of the oil burner as was employed in the Winnetka residence and the arrangements were made as described in the following:

In most cases, on this job, the motor-operated valves were installed on the radiators in the places regularly occupied by the hand valves, though there were a few instances on the first floor where it was possible to put the valves in the basement on the lower end of short risers serving concealed radiation. This, of course, made a neat and convenient arrangement. The valves were wired to a relay controlling the operation of the oil burner, and each room was made so that it could be regulated and maintained at a separate temperature if desired.

The burner runs at either the high or low flame, depending upon whether or not any part of the system is calling for heat. When any room or rooms are calling for heat and the valves are opened by the action of the thermostat in that room, the burner runs at the high flame; when all the thermostats are satisfied, the burner shuts down to the low flame. The relay, operated by the current from the valves, actuates the flame-changing mechanism of the burner in the same manner as would a similar control from a two-position thermostat.

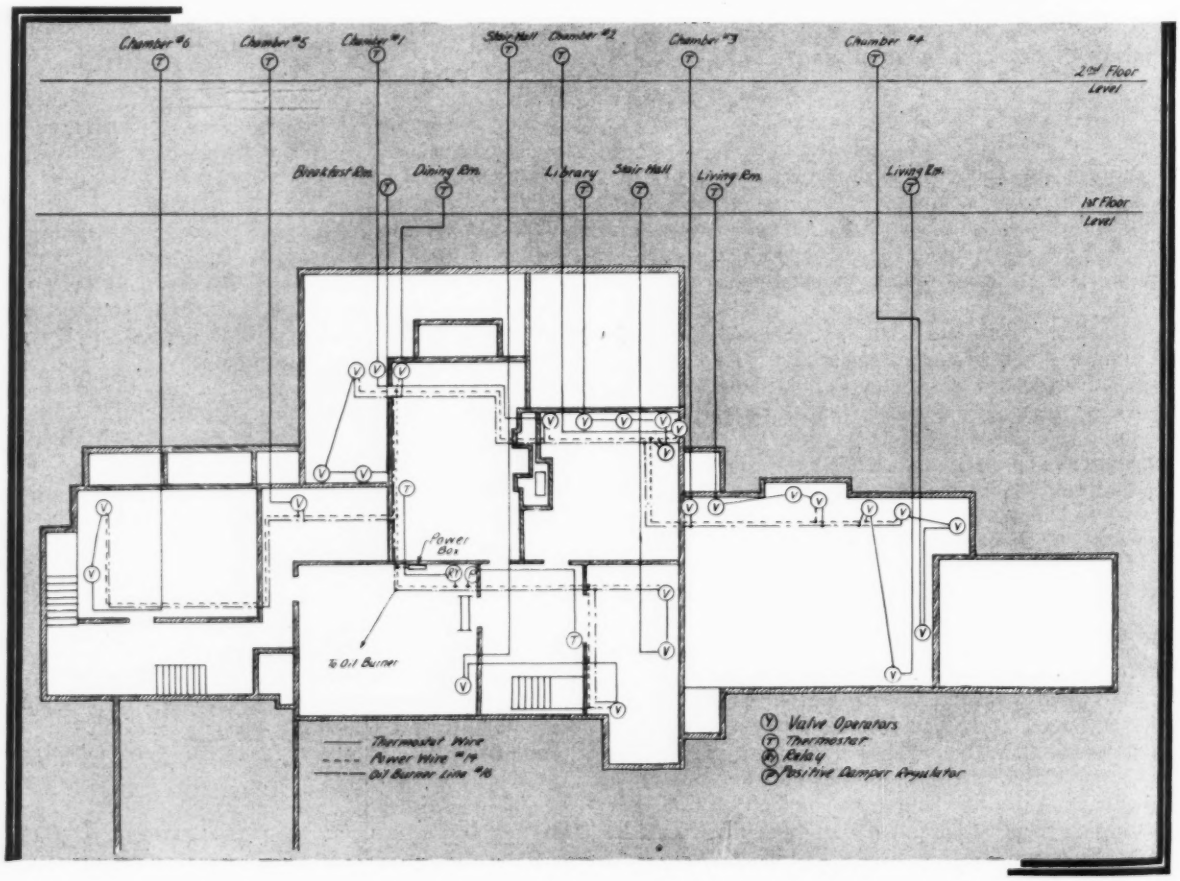
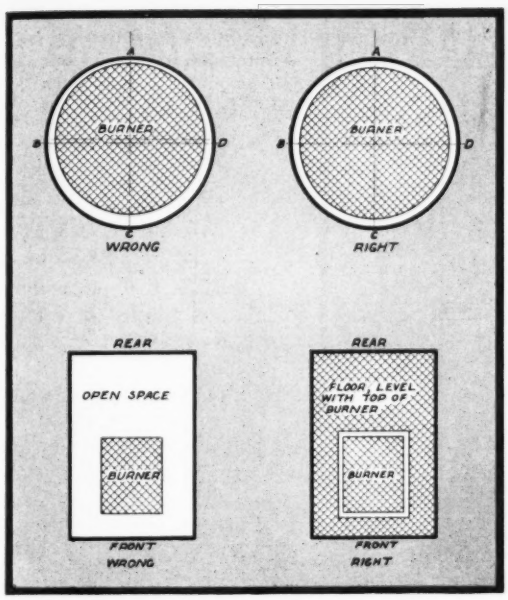


Fig. 2—This is the temperature control lay-out for the residence shown in Fig. 1 as being located in Winnetka, Illinois



The author of this article is research engineer at the engineering experiment station of the University of Arkansas and what he has written here represents the results of his observations and experience in connection with a large number of installations

How to Install, Adjust and Test Conversion Gas Jobs

By L. C. PRICE

THE use of gas as a fuel for domestic heating has increased enormously within the past few years, due to the development of new gas fields, the building of pipe lines to carry the gas to the large cities, and to the cleanliness, ease of control, and other advantages which gas offers. It seems probable that this increase will continue for some years to come.

Gas is probably the easiest of all fuels to burn efficiently, and the easiest to control. These very facts often encourage waste by its use in heating plants which are poorly installed and adjusted so that the actual efficiency falls far below that which might be attained.

A gas-heated house may have a boiler designed solely to burn gas, or it may have a coal-burning boiler or furnace in which a conversion gas burner has been installed. The American Gas Association Sub-Committee on Conversion Burners reported in 1930 that in manufactured gas territory, 50 per cent of the equipment being sold was gas-designed and 50 per cent conversion, while in natural gas territory, 21 per cent was gas-designed and 79 per cent conversion. Hence, the importance of conversion burners is apparent and any efforts to better the efficiency of heating plants equipped with them are well worthwhile.

Boilers designed by the manufacturers to burn gas can generally be installed in only a certain way, and cannot be altered much either in installation or afterward. Conversion burners, however, must be adapted to a variety of types of coal-burning boilers so that their efficiency depends greatly on the knowledge and experience of the men who install them. Quite timely then is a statement of a few requirements of such installations, the observance of which has been proven to result in uniformly good efficiency. This article presents the observations and experience of the writer during a large number of tests of conversion burners in domestic boilers, and his efforts to secure better efficiency from them.

In the combustion and use of gas, as of any fuel, certain heat losses occur. By far the largest of these is the heat escaping up the chimney, commonly called the stack loss. This stack loss is of three kinds; namely, heat in uncondensed water vapor which is one of the combustion products, potential heat in any combustible gases which may escape unburned, and heat carried up the stack in the hot flue gases.

Almost all fuel gases contain hydrogen which, when burned, forms water vapor. The amount of this vapor is quite large, and the stack gases must always be hot enough to carry it up the chimney without condensation. The heat required to evaporate that amount of water is consequently an unavoidable loss, the size of which depends upon the temperature of the stack gases.

Fig. 1—At the upper left, the top drawings show the wrong and right ways for installing round gas burners in round boilers. The lower drawings show wrong and right installations of burners in rectangular boilers. All of this is from the standpoint of air supply

Combustible gas in the flue will be mostly carbon mon-

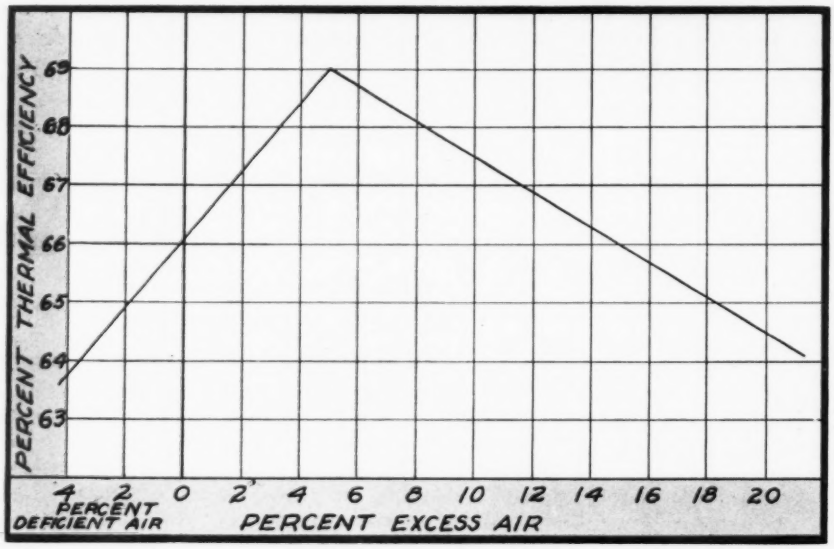


Fig. 2—This chart shows the typical relation between efficiency and air supply. It indicates a highest efficiency at 5 per cent excess air

oxide, which cannot be tolerated, both because it is dangerous to human life and because it carries away a very large amount of potential heat. Its presence in the flue can be prevented only by insuring that each particle of the gas finds enough air to burn it completely. If a gas burner could be made to mix gas and air perfectly, only the theoretical amount of air would be required, and the percentage of this necessary excess air depends on what might be called the mixing factor, or the percentage of the total air which is intimately mixed with the gas before and during combustion. Any air admitted above the necessary amount serves simply to cool the fire, and so reduce the efficiency of burner and furnace.

A good example of how efficiency is affected by the air supply is shown in Fig. 2, which is a plot of the typical relation between efficiency and air supply showing data from an actual test of one domestic coal-burning boiler and one conversion gas-burner. The boiler had a very small heat-absorbing surface, which accounts for the low efficiency shown. The actual efficiency, however, is not important here, and the figure is shown to illustrate the importance of correct air supply. The obtainable efficiency comes to a sharp peak at 5 per cent theoretical excess air, drops off very rapidly as the air supply is decreased, and decreases again though not so rapidly as the air excess is raised.

The transfer of heat from the fire and hot gases to the boiler depends largely on the boiler design, but also somewhat on the installation of the gas burner. The burner must be set low enough in the furnace so that the flame and hot combustion products pass over the largest possible area of heat-absorbing surface.

It is evident, then, that the efficiency of any conversion gas burner installation depends primarily on how well it meets three fundamental requirements.

First, the burner must mix the gas and air intimately and as completely as possible before and during combustion. Each particle of gas must find a mating particle of air if it is to be burned completely.

Second, the amount of air supplied must be just enough to burn the gas completely, and no more. Just how much air is required depends on the composition of the gas and on the completeness with which gas and air are mixed.

Third, the burner must be so installed that the flame and hot gases pass over as much of the boiler wall as possible, to allow the absorption of the most heat.

In treating these requirements separately, the last named will be considered first.

A few precautions are necessary to insure that as much heat as possible is absorbed from the combustion products before they are allowed to escape up the stack. First, the hot gases must pass over as much of the heat-absorbing surface as possible, and, second, they must be made to hug it as closely as possible.

The first requirement necessitates placing the burner as low as possible in the combustion chamber—above the ashpit. Obviously, the flame must not strike a boiler wall below the water jacket; otherwise, the lower the better.

Some burners direct the flame against the boiler wall. Others use sloping baffles of some refractory material for the same purpose. Some others are of the box type, with the fire in the center of the combustion chamber. With burners of this last type it is very necessary to use some sort of baffle to throw the flame out against the furnace walls. In some round boilers using this type of burner it has been found satisfactory to use a baffle made of heavy cast iron plate about 8 in. above the top of the burner, and smaller than the combustion chamber so as to leave about 1 in. clearance all around.

THE EFFECT OF BAFFLING

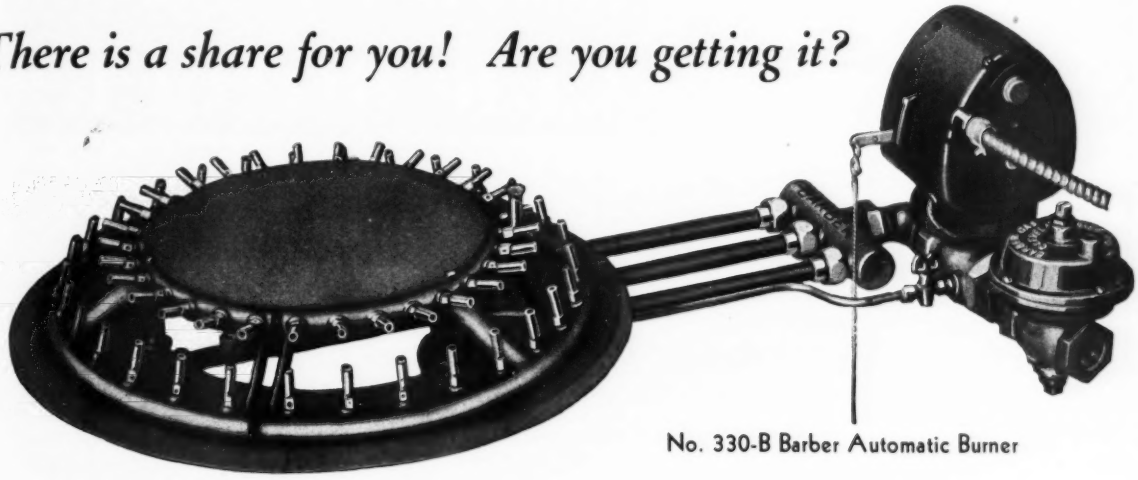
The flue passages of coal-burning boilers are large, and to make the combustion products travel close to the walls when burning gas, these passages are sometimes partially closed by baffles. Experiments at Purdue University ("Tests of Gas Home-Heating Equipment," by R. B. Leckie and C. H. B. Hotchkiss, Purdue University Engineering Bulletin, May, 1931, Research Series No. 36) have shown that efficiency may be increased as much as 2 per cent by such baffling.

The importance of intimate mixing of fuel and air before and during combustion has already been shown. Attainment of this result is somewhat dependent on the design of the burner, but also very largely dependent on the manner of its installation in the furnace.

The thorough mixing of any two substances requires

THE MOST PROFITABLE FIELD AVAILABLE TO THE HEATING INDUSTRY!

There is a share for you! Are you getting it?



No. 330-B Barber Automatic Burner

"CONVERSION GAS BURNER installations are actually profitable—have shown an enormous increase during the past two years." This statement is not a guess, but is borne out by dollars and cents expenditures. The Public *is* spending money. First, for the necessities of life and second, for those commodities that have attractive appeals. BARBER AUTOMATIC JET GAS BURNERS answer with Comfort, Convenience, Cleanliness and Safe and Economical Heat.

BARBER BURNERS are quickly and easily installed in any furnace or boiler. You receive them Tailor-Made to fit the individual job, backed up by Factory Responsibility, the result of years of experience and research. Hundreds of installation jobs are open to every wide-awake Heating Contractor, *and there is a Barber Burner for every one of these jobs.*

NOW IS THE TIME TO CASH IN ON THIS OPPORTUNITY

Every home-owner in your community is a prospect. Many need to be educated to the fact that the installation of a Barber Automatic Jet Gas Burner does not mean the junking of his coal fired furnace or boiler—that with the installation of a Barber Burner he has a highly efficient gas fired heating plant—and that the cost is NOMINAL.

Get your first installation in NOW. Don't wait until the heating season is under way. Use it to demonstrate and watch the prospects it will attract to your show room.

Write us for literature to be distributed to your prospects, catalogs and sales helps.

Illustrating No. 324-B Barber Automatic Burner installed in a round boiler. Note its simplicity of installation.

THE BARBER GAS BURNER CO.

3702-04 SUPERIOR AVENUE . . CLEVELAND, OHIO

AUTOMATIC HEAT SECTION

There Is ALWAYS Business for the Heating Contractor Who Sells SPENCER BOILERS

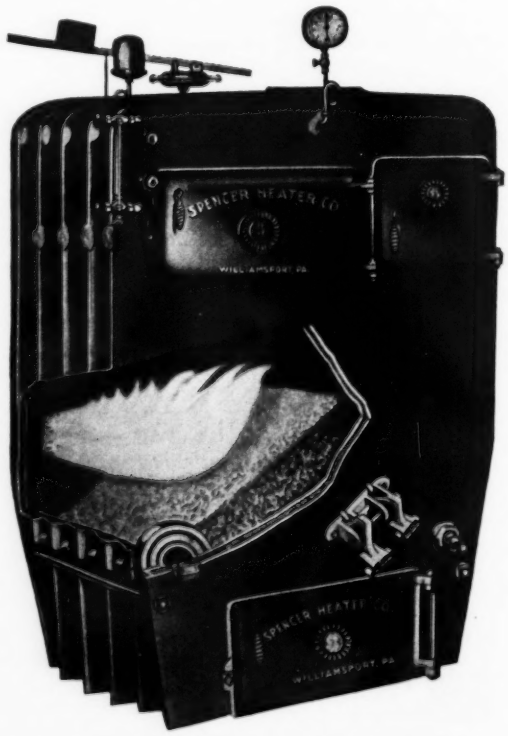
SALES figures prove this, conclusively. We do not need to tell you of the condition of business in general or in the heating industry during 1931 and the first half of 1932. Yet, Spencer sold MORE boilers in the first six months of the present year than in the same period of 1931, the best year in Spencer history. Heating contractors who sell Spencer, have shared and will continue to SHARE IN THIS INCREASE. Regardless of what the future may have in store, Spencer is laying its plans to continue these gains. We are selling a necessity. PEOPLE MUST HAVE HEAT. Last winter's repair job is likely to be next winter's breakdown, and must be replaced. The heating contractor who sells Spencer Boilers has this additional advantage over those who do not: he is offering a product that is specially fitted to today's market. People demand economy as never before — and Spencer offers them a saving of as much as $5 on every ton of coal—a *Reduction of 40% in Fuel Bills.*

Spencer also offers exclusive features that assure the greatest labor-saving; the highest heating efficiency; the greatest comfort. Spencer alone offers Combination Gas-Coal burning, which can be obtained immediately or made available later.

Spencer Heater Company is always developing new forms of sales co-operation to assist heating contractors in selling more boilers and MAKING MONEY. Write for details.

SPENCER HEATER COMPANY, Williamsport, Pa.
Division of Cord Corporation
The Spencer Foundry Company, Ltd., Toronto, Ontario, Canada

SPENCER
Magazine Feed
BOILERS
for steam, vapor or hot water



their division into small particles. The design of gas burners is such that the gas emerges in small streams or thin sheets. The air, therefore, must reach the fire in sheets of uniform thickness. This means that the clearance between the gas burner and the boiler walls or brickwork must be the same on all sides. It is not known just what spacing gives best efficiency at any rate of gas flow, but it is certain that the spacing must be uniform. Take, for instance, a ring burner of the Bunsen type, in a round boiler, as shown in Fig. 1. Suppose that the burner is 2 in. smaller than the boiler, and is off-center so that the clearance at A is only ½ in., at C 1½ in., and at B and D, 1 in. The sheet of gas flame, of course, is of uniform thickness. Obviously, more air passes at C than at A. Restriction of the total air supply until there is no excess at C will evidently result in incomplete combustion at A, B and D, while complete combustion at A will require a large excess at C, and some excess at B, and D. Correct air supply at B and D will cause a deficiency at A, and an excess at C. It is evident, therefore, that with such an installation, the mixing factor is low and a large excess of air is required for complete combustion. Installations similar to this have often been encountered by the writer.

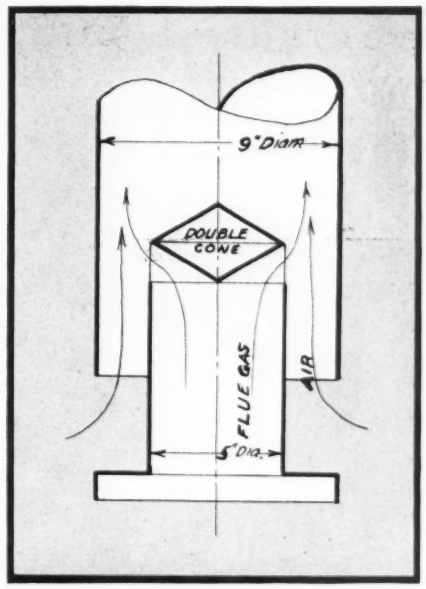


Fig. 4—The view at the right shows a draft hood for use in gas heating

CENTERING BURNER IS IMPORTANT

Proper centering of the burner always results in a reduction in the air requirements and a rise in efficiency. Another instance of bad mixing is recalled, as that of a rectangular boiler in which a box-type gas burner was installed about as shown in Fig. 1. The burner was simply set in the firebox without any attempt to stop the passage of useless air. There were air doors in both front and rear of the ashpit. When air was admitted at the rear only, so that much of it never reached the fire, perfect combustion could not be secured with less than 50 per cent excess air. Stopping up the rear air door and taking air at the front allowed reduction of the excess to about 20 per cent, while installation of a floor in the firebox to stop all air passages, except a space about ½ in. wide around the burner allowed still further reduction of the air supply and consequent increase in efficiency.

The subject of mixing also covers admission (accidental and otherwise) of air above the fire. The writer does not know of any gas burners which require air above the fire. Certainly the blue-flame burners do not. Air admitted in this way has no part in the combustion, but is simply drawn up through the boiler passages and cools them. Consequently it is very necessary that the fire door, fire door damper, and cleanout doors be kept closed, and that special pains be taken to stop leaks around the doors, in the fire door damper, and elsewhere.

Two factors determine how much air is supplied to the fire in any given installation; namely, draft, and air door setting. These will be considered separately.

Chimney draft is highly variable. In cold weather, with a steady fire, the chimney is hot and the draft strong. In very mild weather the reverse is true. Winds which vary in direction and strength also affect the intensity of draft. Since with a given air-door setting, variable draft causes varying air supply, it follows that the chimney draft should be eliminated as far as possible. There are times, however, when the gas passages in the boiler offer such a high resistance to flow that some chimney draft is necessary to get enough air to the fire.

Gas-fired boilers eliminate chimney draft by the use of draft hoods. These are not generally used on conversion jobs, although their use is desirable wherever

(Continued on Page 114)

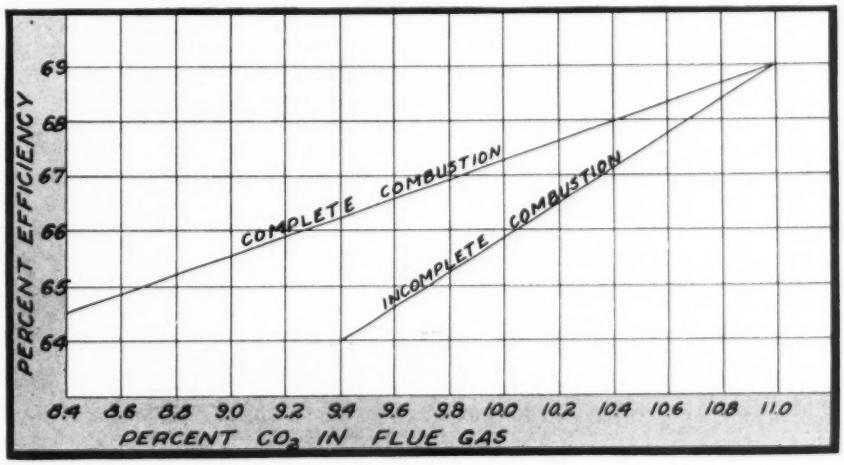


Fig. 3 — This indicates the typical relation between efficiency and CO_2 in flue gas

AUTOMATIC HEAT SECTION

The greatest
NOW-SELLER
in the heating field

NUMBER 37

Automatic water-level control at a price the small-boiler owner can pay!

A NOW SELLER because automatic water-level control is essential to every automatic job and vital protection for every hand-fired boiler—a now seller because the new McDonnell No. 37 Feeder has wiped out the one sales-resistance in the path of this profitable business—*price*.

And the low price of the McDonnell No. 37 isn't a result of cheapening the feeder. The feeder is as fine as any McDonnell Feeder ever built—and more advanced. The saving is in the new, ingenious quick hook-up feature that cuts installation time from hours to minutes. This feature enables you to sell a *quality* feeder at a lower price *installed* than ever before. You pass this saving on to the boiler owner without cutting your profit, and with full assurance that you have installed a dependable feeder.

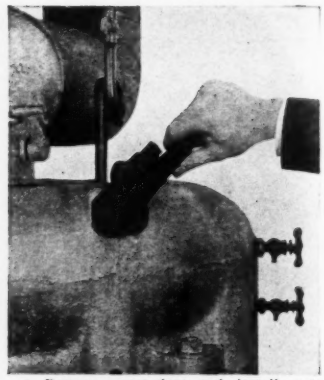
Note the picture-story of the quick hook-up opposite. Note that it is bound to duplicate the water-column conditions—an essential point when dealing with small boilers. Also note that the cut-off point is correctly and automatically located without any trouble on your part.

When installed on automatic jobs, a low-water cut-off switch can be furnished with the feeder. This double protection is the last word in automatic control for oil-fired or stoker-fired boilers.

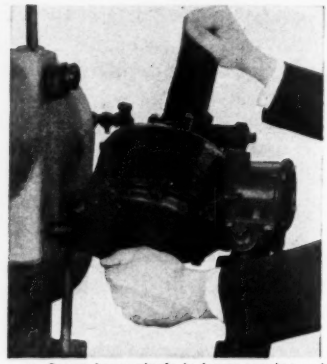
Ask for a new circular showing the many other advanced features of the No. 37. Now is the time to familiarize yourself with this new feeder.

McDONNELL & MILLER
400 N. Michigan Avenue CHICAGO, ILL.

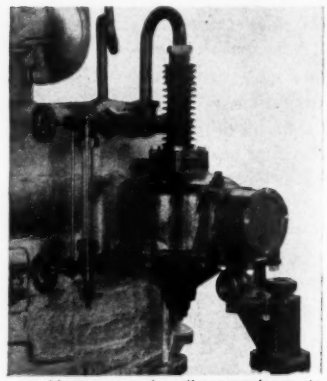
McDONNELL automatic boiler water level CONTROL



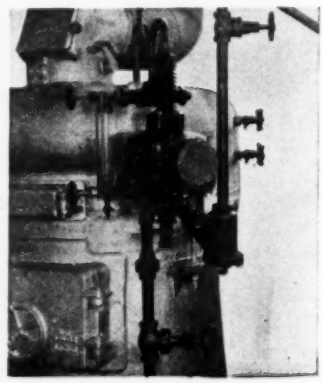
1 Remove water-glass and install male union in upper gauge-cock tapping.



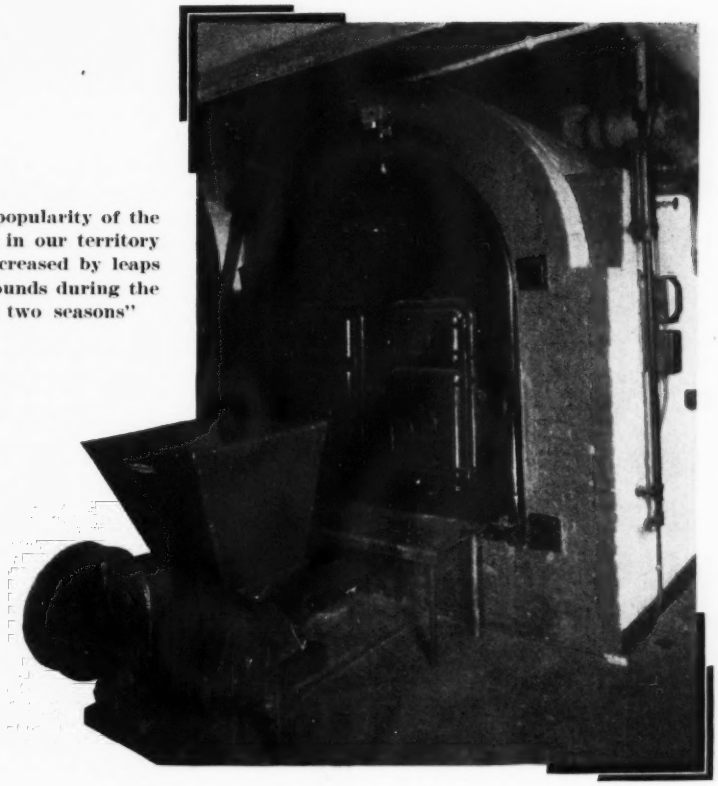
2 Insert brass nipple in lower tapping and swing feeder to tighten nipple (nipple is furnished).



3 Move goose neck until upper union meets. Then install gauge glass on feeder as shown.
(Goose neck makes feeder adjustable to any boiler under 2500 square feet).



4 Connect city water and direct feed pipe to return piping in bottom of boiler.



"The popularity of the stoker in our territory has increased by leaps and bounds during the last two seasons"

By JAMES H. MEREDITH

"Engineering Forms the Basis of Our Stoker Sales"

Present buying public is more interested in results than claims

TO THE EDITOR:

We have been very much interested in following the many helpful articles in your section on Automatic Heat during the past few months, particularly those on oil burners and stokers. It occurred to me that you might possibly be interested in our experience here in the southern territory on stoker sales and performance.

I have tried to emphasize particularly the sales value of carefully worked out installations, and their bearing on business volume. I believe this is a side of the stoker game that has not, generally speaking, received as much discussion as it deserves.

The popularity of the stoker in our territory has increased by leaps and bounds during the last two seasons. We are not in the natural gas district here. Oil, being delivered in tank cars is a relatively expensive fuel. But cheap, bituminous coal surrounds us on all sides and the situation for Atlanta, Birmingham, Nashville and other towns is much the same. It is a clear case of low-priced fuel dominating the market and determining the type of heating equipment. Thus the trend towards automatic heat has become a trend towards the coal stoker. There has been the usual amount of grief, like that which attended the popularizing of the oil burner—due in large measure to faulty installation practices rather than inferior equipment. The buying public now, however, is demanding more information about the reliability of the product for which they spend their good money and the value of a well-designed job is proportionately greater—to the dealer as well as the customer.

The enclosed sketch is an exact copy of the layout of the boiler room in a new $100,000 residence recently completed, in which we installed the heating, plumbing and stoker. It is worthy of mention because of its completeness. You will notice the indirect heater, supplying hot water both summer and winter, with the hot water control installed directly in the boiler to prevent

AUTOMATIC HEAT SECTION

it generating steam while the room thermostat above in the living room is not calling for heat. It is also equipped with a duplex water feeder with an automatic low-water cutoff switch to prevent any possibility of low water damage to the boiler. The ash plate is situated so that clinkers and ash are raked out through the door usually used for handfiring. The stoker is a side-installation with the hopper directly in front of the coal room door, saving steps and dirt, in filling. The instrument panel, carrying a manual switch, pressure switch, etc., is mounted conveniently near.

The architect took our suggestions on this boiler room layout and we honestly believe it is as well arranged as is possible with equipment of this kind.

James H. Meredith,
Chattanooga, Tenn. Knoedler & Meredith.

IMPORTANCE OF ENGINEERING

A GOOD stoker installation is as important to the dealer as it is to his customer. An all too frequently neglected source of valuable advertising is the word-of-mouth recommendations so generously given to your stoker by the user who has been pleased with a workmanlike job. With all due respect to the power of sales presentations and personal interviews, we have found that many of our prospects' minds often are made up and decisions reached, when we least expect them—during a locker room conversation or over the evening bridge table.

Our experience during the past trying year—and the experience of a number of other stoker dealers with whom we have talked—seems to show definitely that the present cautiously buying public is a great deal more interested in results than in claims and in seeing the actual performance of past stoker jobs than in reading advertising brochures.

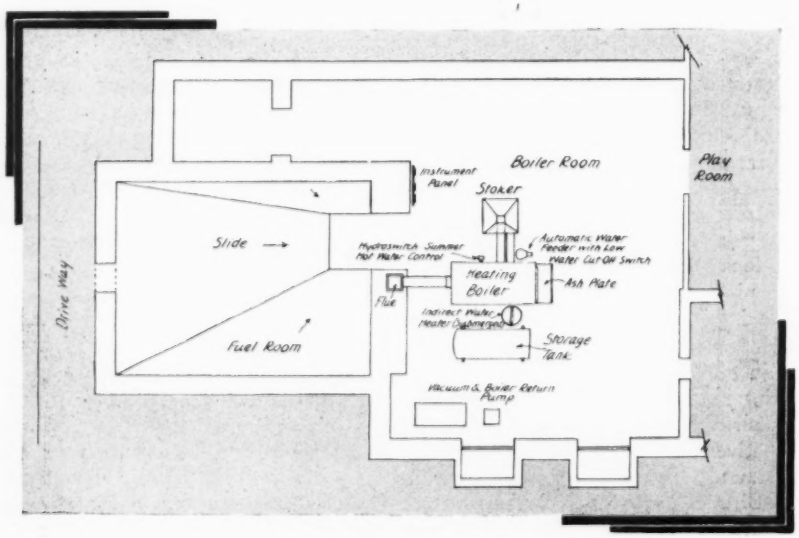
Not long ago we had occasion to interview a prospect, whom we shall call Mr. Brown, a man of considerable means. He was interested in an automatic stoker for a vapor system in his expensive residence. Several calls and a thorough description of the features of our machine, together with a detailed diagram of the finished job, seemed to make an impression but produced no results in the shape of a signed order. Finally, he agreed to inspect some of our stokers under actual working conditions.

That same evening we took Mr. Brown to several homes that were being stoker heated. On the second call the owner himself met us at the door and cordially invited all of us in to inspect his boiler room. He proceeded to tell our prospect the history of his stoker experience and how his machine had lightened his heating drudgery, reduced his fuel costs, etc. Although we had expected a recommendation, his enthusiasm was something of a surprise, even to us. However, in the space of half an hour Mr. Brown had obtained the information he had been waiting for—which all our sales talk could not convey. It was the concrete evidence of satisfactory performance that was desired. "A machine like that," he told us on leaving, "is what I have been looking for." Next season when his stoker, which is now installed, has proven its worth, we expect to find him equally useful as a sales promoter.

The heating contractor, knowing the importance of ample capacity in boilers, will easily understand that a successful stoker job requires a machine large enough to handle its load easily. It is not surprising therefore, to find stoker manufacturers laying great stress on the importance of selecting and quoting on a machine with sufficient capacity for the load to be handled.

CONDITIONS TO CONSIDER

It is well to remember that the only possible way in which a stoker can be pushed is to secure a coal of a high Btu. content. Consequently, when an owner finds that his new stoker, which seemed so satisfactory when the days were merely chilly, fails to carry his plant when the mercury hovers around the zero mark, he is confronted with the painful necessity of buying and burning only the highest priced fuel—thereby suffering a penalty



"This is an exact copy of the layout of the boiler room in which we installed the heating, plumbing and stoker"

ECONOMICAL AUTOMATIC HEAT

Is In Demand . . . Has Already Opened a Flourishing New Field of Business . . .

GET INTO IT WITH THE BUTLER COAL STOKER

KNOWS NO SEASON . . . .

Salable the Year Around . . .

THE nation is sold on Automatic Heat. A million homes and places of business have been paying extra for special fuels in order to enjoy it. The demand is greater than ever before **But It Is NOW A Demand For Economical Automatic Heat.**

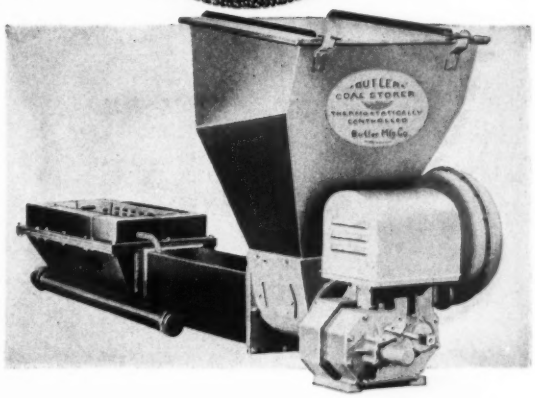
Coal, always the most economical fuel, now is made even more economical and **The Most Efficient Automatic Fuel.**

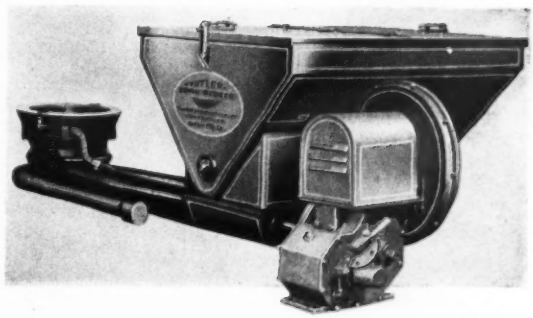
Dealers on the alert for real opportunity are getting into this fast moving, flourishing field with the outstanding bituminous coal stoker—The Butler—unrivaled in efficiency, unmatched in simplicity of design and in operation.

It is not too late (unless your territory is already assigned). From now on is stoker selling season—The Butler Coal Stoker is **Salable The Year Around** to apartments, hotels, hospitals, schools, stores, office buildings, greenhouses, laundries and other commercial and semi-industrial enterprises which are adopting every economy measure possible to cut down operating expense.

With the Butler Coal Stoker you can show them savings of from 15 to 50% on fuel bills, a return of as much as 40% the first year on their investment, fully automatic heating and elimination of smoke, soot and loose ashes.

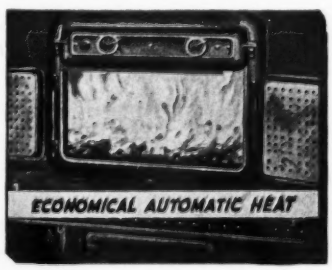
Get the full history of the Butler Coal Stoker, details of its advanced design, patented system of air distribution, adjustable regulation of air flow, unique, silent, selective transmission which changes fuel feeding speed without shifting a single gear, back smoke eliminator and dual automatic control system—write for the new book pictured below and you will readily recognize that a genuine opportunity to found the leading automatic heating business of your community is being presented. When we send the book we will tell you of our nationwide merchandising program which makes the Butler Coal Stoker dealer franchise extraordinarily valuable.





START THE LEADING AUTOMATIC HEATING BUSINESS IN YOUR TERRITORY

SEND FOR THIS BOOK TODAY



BUTLER COAL STOKER

BUTLER MANUFACTURING COMPANY,
1263 Eastern Ave., Kansas City, Mo. 963 6th Ave., S.E., Minneapolis, Minn.

- ☐ Send copy of Butler Stoker Book "Economical Automatic Heating".
- ☐ Advise if ..... territory is open.
- ☐ Send district representative when conveniently near.
- ☐ Have him call as soon as possible.

Firm Name .....

By .....

Address .....

City ..... *State* .....

AUTOMATIC HEAT SECTION

An Old Adage

"He who would seek the choicest pearls must dive to the depths." By the same token, the stoker manufacturer who would produce a "choicest" stoker must build with the utmost care . . . and specify a motor of unquestioned suitability.

The Leland cradle-mounted design is ideal for this requirement.

It is free from vibration and very quiet running.

It has a unique short-circuiting device that has been time-tested on a wide variety of applications.

The brush-lifting mechanism employed to eliminate brush noise and wear is rugged, simple and positive in action.

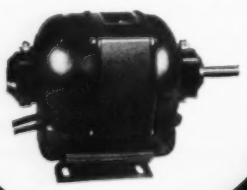
This motor has a continuous self-filtering lubrication system . . . one of the reasons bearing troubles rarely occur in a Leland motor.

Service on both standard and special designs is of the highest order . . . adequate to the need in every part of the country.

For detailed information send for Bulletin No. 28.

The Leland Electric Co.
Dayton · Ohio · U·S·A

CANADIAN ADDRESS TORONTO CABLE ADDRESS LELECT



Leland Motors

for someone's mistake in selling him too small a stoker.

Where a plant is slightly underboilered, i. e., where the actual radiation attached is a little in excess of the boiler's capacity, it is advisable to take an accurate check of the radiation and size the stoker accordingly. Frequently the performance of such a job can be vastly improved due to the stoker's virtue of being able to fire a boiler somewhat in excess of its designed capacity.

But the badly underboilered job should be avoided, unless, as is frequently possible, the owner can be persuaded to install a new boiler of proper size. Otherwise, as one stoker man humorously but aptly expressed it, the best way to stoker such a plant is to "walk off and leave it." Such a job rarely gives satisfaction and all future ills will be blamed on the machine.

In some instances, a job will be found with too large a boiler for the actual load attached. Most manufacturers recommend that the stoker be selected then according to the boiler capacity, or nearly so, to provide proper pickup. This practice is frequently modified after experience has been gained.

STOKER SIZING IS VERY IMPORTANT

This problem of stoker sizing is of the utmost importance and should always remain uppermost in the dealer's mind. It is a line of reasoning that will often be distorted by unscrupulous, inexperienced competition, but the dealer who sells his stoker intelligently in this respect can be sure of reaping an early reward for his wisdom.

The household stoker is essentially a labor-saving device. Nearly every customer regards it as such, and the dealer can profit directly and indirectly, by making every installation one that is easy to fire and easy to keep clean.

Frequently pit settings are necessary so as to provide a sufficiently large combustion space in the boiler, but by careful attention the bad features of the stoker pit can be minimized. Where the basement floor is of concrete we usually make a smooth concrete pit, with a small curb 1-in. higher than the floor line around the edges to keep sweepings out. If not too deep, the pit sometimes can be made easier to clean by forming a slope or incline a foot or more in width on one of the sides. The housewife will later appreciate the help it gives in removing coal dirt and dust from the pit floor.

By following out the ideas of labor-saving which the purchase of the stoker has implanted in the customer's mind, it is frequently possible to effect the sale of other devices which will help make his boiler-tending entirely automatic. We have sold and installed automatic boiler feeders and summer-winter hot water supply systems for homes that are stoker fired as a result of this. Very often the sale of the boiler feeder is little more than a matter of suggestion to the customer.

A summer and winter hot water supply usually can be installed on any system by the use of an indirect heater and a water temperature control switch. Our experience has been that by encouraging the use of the heating boiler and stoker for supplying hot water during the summer, greater fields for profits are opened up and the servicing of both machines and heating plants is spread out more evenly during the year.

The ELECTROL HEATING UNIT

...The Reasons for Its Superiority

The Electrol Heating Unit is a complete oil burning and steam making unit. It is something far more than the mere combination of an oil burner and a boiler. Every Electrol Heating Unit is designed and built as a *complete unit*—and each unit is constructed in proportion to the designed load. The unit is compact, simple to install, the mechanism is completely enclosed and the case is beautifully finished.

High Efficiency

In tests, the Electrol Heating Unit has shown an over-all efficiency of better than 80%. A 12.6% CO2, with a stack temperature of less than 400 deg. F., has been obtained at rated capacity. Because it is built as a complete unit—requiring no adjustments or changes when installed—these high efficiencies obtain in the field as well as in the laboratory.

Unusual Quietness

Acoustical experts of the Johns-Manville Co., working in collaboration with Electrol engineers, have achieved an unusual degree of quietness in operation through the liberal use of Johns-Manville sound absorbing and sound insulating materials.

Induced Draft

The fan for supplying air for combustion is attached to the discharge end of the boiler, drawing the air through instead of pushing it in. Insures clean fire on cold start and positive control of secondary air. Precludes all possibility of puff backs and eliminates uncertainties of chimney drafts.

Low Heat Loss

Boiler is of copper bearing steel with seamless fire tubes. Joints electrically welded. Constructed to prevent air and gas leaks. Built in accordance with A. S. M. E. specifications for working pressures up to 100 lbs. and tested to 150 lbs. hydrostatic pressure.

Cylindrical combustion chamber, lined with refractory, is located in center of boiler proper and is entirely surrounded by water. Combustion gases travel the complete length of the boiler three times through correctly proportioned flues. This, combined with the three-shell construction of the boiler and the insulating material, insures high efficiency and low heat loss.

Quick Steaming

The unit has an ample steam dome. Quick steaming, resulting from the concentration of heat upon a small volume of water, distributes pressure throughout all pipes and radiators and prevents the condition of some radiators still being cold when the thermostat cuts off. Unit operates fewer hours per day with consequent fuel economy. 99% dry steam produced at steam delivery outlets between boiler proper and outer shell.

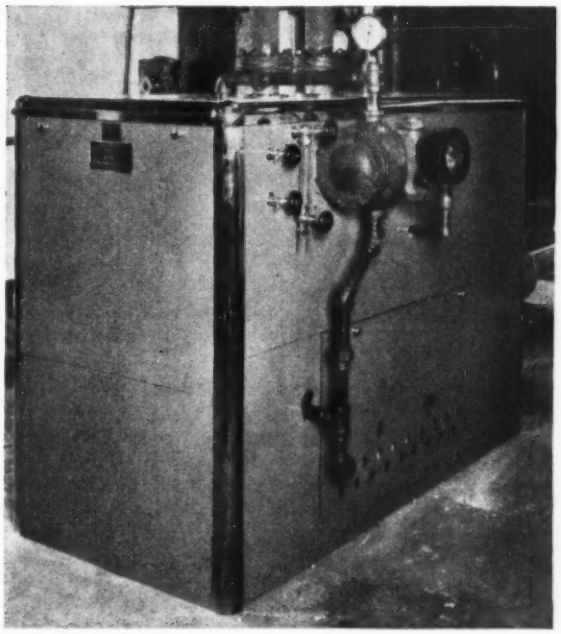
Low Water Line

The unit has an exceptionally low water line—42 in.—allowing correct pitch of return lines, particularly in low basements.

Clean Operation

Complete fuel combustion eliminates soot. Rapid circulation of water prevents formation of scale and blistering of tubes and crown sheets. Return inlets located so as to eliminate all sludge and foreign matter entering boiler proper.

ELECTROL INCORPORATED
227 East 45th Street
New York City



Quick, Economical Hot Water

The water-back end of the combustion chamber is designed to contain a domestic hot water heating coil. Coil is submerged in boiler water and is also heated by combustion gases providing rapid, low cost domestic hot water.

Other Features

Mechanical atomization. Continuous electric ignition, plus Electrol principle of low velocity rotating air. Pressure operated and magnetic cut-off valve of Electrol design prevents after-drip of oil. High voltage controls used throughout. Safety control is the famous Electrol Master Control.

Three Sizes

The Electrol Heating Unit is made in three sizes to handle 500, 1000 and 1500 sq. ft. of steam radiation respectively. Prices are in line with present conditions and allow the dealer an ample profit margin. Deliveries can be made at once.

•

A limited number of desirable territories are still available for responsible dealers. Use the coupon below for further information.

Electrol Incorporated,
227 East 45th Street,
New York City

Please send me full details and specifications of the Electrol Heating Unit.

Name .....

Address .....

AUTOMATIC HEAT SECTION

Most vital contribution to Oil Heating in years

the *new* Weil-McLain OIL BURNING BOILER

THE new Weil-McLain Oil Burning Boiler makes many of the most *vital* contributions toward increasing the *efficiency* and *economy* of oil heating since the introduction of the oil burner itself. It is a *new* product specifically *designed to work with oil burners* in heating homes and medium sized structures. It meets the *new requirements* of oil heating with a *newly proportioned combustion section* in which *diametric width* has been increased to provide an *extended hearth* and the *extra space* essential to greatest combustion efficiency when burning oil. This feature of design achieves a *scientific balance* between all boiler portions. Extra space is provided where it is most needed and *most effective, without* sacrifice of *long fire travel.* And, vice versa, long fire travel is preserved *without* sacrificing the *efficient proportions* of the fire chamber. The result is a boiler that includes an ideal *balance* of *all* features *essential to efficient operation* with an oil burner . . . *ample combustion space . . . long fire travel . . . extra heat-absorbing surface.*

Retains proved Fuel-Saving Features

In addition to this and other new features, tried and proved *fuel-saving* and heat-utilizing features long identified with all Weil-McLain Boilers are retained.

Corrugations like this ∿∿ in all vital heating surfaces add *30% more heat-absorbing surface,* thereby increasing its heat-absorbing *ability.*

Wide water channels, particularly in the fire chamber section, bring greater volume of water into this area of *greatest heat concentration,* assuring *quick, free circulation* and *quick response.*

Extra long "smooth-flow" fire travel results in more of the heat produced by the oil burner being utilized; no short cuts to the chimney. The heat must do its work before passing up the chimney.

Detailed information is important to you if you want to keep abreast of modern heating equipment and cash in on this *new market.* Free literature mailed upon request. No obligation. Write today.

WEIL-McLAIN COMPANY, General Offices: 641 W. Lake St., Chicago
NEW YORK OFFICES: 501 Fifth Avenue
Boiler Division: Michigan City, Ind. *Radiator Division:* Erie, Pa.

Weil-McLain
SCIENTIFIC COMBUSTION
BOILERS

FIGHT FUEL WASTE AND DELIVER MORE HEAT

Other extra-value features

EASILY CLEANED heating surfaces... **INDIRECT WATER TAPPINGS** for attaching external water heaters . . . **INSULATION OF SILICA WOOL** between boiler and enameled steel jacket . . . **OBSERVATION PORT** for checking operation of burner . . . **PROVISION FOR INSTALLING SAFETY CONTROL** device in fire door or Stack Control . . . **LIMIT CONTROL TAPPINGS** at top of boiler . . . **BALANCED DAMPER** standard equipment.

Front Cross Section View 7 Section Boiler Showing Corrugated Heating Surfaces

The most effective surface of the total surface of *any* flue is the *upper horizontal portion.* Note that this boiler has *wide* flue ways in which the *upper horizontal portion* is many times greater than less effective vertical surfaces. Note also that these upper horizontal surfaces are *corrugated* like this ∿∿ instead of flat like this ——, thereby crowding in still more heat-absorbing surface where it is most effective.

How Insulation Influences Fuel Consumption

By A. P. KRATZ

This paper was delivered at the Midwest Bituminous Fuels Conference recently held at Purdue University. It contains information which is of particular interest to the heating contractor especially in view of the new demands brought about by the increasing adoption of automatic heat and air conditioning

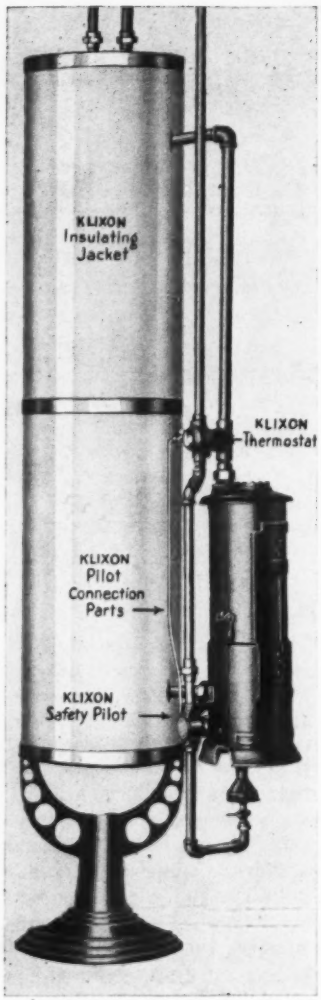
THE problem of economical heating may be divided into two parts, consisting of, first, the effective production and utilization of heat; and second, the effective conservation of the heat produced. While these two parts of the problem are of equal importance, most of the emphasis has been placed on consideration of the factors affecting the choice of equipment for the efficient production and utilization of heat. Until recent years the use of insulation as a means of effective conservation of heat through the reduction of the heat loss from the building as a whole has not received the consideration that it merits. However, the increasing popularity of more expensive fuels and the necessity for effective methods of conservation of heat has finally directed attention to the various methods of conservation, with the result that numerous forms of heat insulation materials have appeared on the market. The use of these materials involves additional investment outside of the heating plant itself. The fact should not be overlooked that a plant using cheaper fuels with such an additional investment also secures corresponding benefits in the shape of reductions in the size of plant required and amount of fuel used, thus serving to restore the competitive balance in favor of the cheaper fuel.

The necessity for the use of effective heat insulation materials in cases where the room temperature is to be maintained considerably lower than that of the outdoor air, has been realized by the refrigerating engineers for a great many years, and the principles underlying their use have been well established. These principles are not fundamentally different in the case of heating, where the room temperature to be maintained is higher than that of the outdoor air. However, the newness of this point of view to the public at large, the great number of materials subject to choice, and the sometimes conflicting claims in regard to the materials available, have resulted in a considerable amount of confusion on the subject, and an atmosphere of apparent mystery has been created where no mystery actually exists. The scope of this paper has, therefore, been restricted to a discussion of the fundamental principles involved in the comparison and selection of insulating materials without entering into any details concerning the specific properties of the materials themselves.

General Principles. Heat always flows from a body at a relatively higher temperature to one at a lower temperature. A building with the contents at 70 deg. Fahr. surrounded by outdoor air at a lower temperature forms such a combination, and it is obvious that there will be a continual loss of heat from the building. If the temperature inside of the building is to be maintained, it is evident that the heating system must supply the heat just as rapidly as it is lost. Further reflection also makes it evident that, no matter how efficient the heating system is, if the building is poorly constructed, thus losing heat rapidly, a large quantity of heat must be generated, and the heating cost will be high as compared with that for a

This shows the installation of a board type of insulation in an attic

AUTOMATIC HEAT



Converted—a handsome job in a few hours with the KLIXON KIT.

When Your Salesmen Meet the Stone Wall of "COST"

We recognize the fact that a new automatic storage heater is more desirable from the standpoint of efficiency than a converted job. Yet there are many householders who cannot afford wholly new equipment.

The desire for automatic hot water is strong. If, as a second line of attack, you sell the Klixon Conversion kit, you can get many jobs now that would otherwise be held up until times get better. With it you can convert a side arm heater into a safe automatic storage job in approximately three hours' time. The cost to the householder is approximately half that of the most inexpensive new automatic heater. The controls will be Klixon, the installation approved by Good Housekeeping Institute.

All of the many satisfied present owners of these Kits are first class prospects for new equipment when they can afford it. Send your wholesaler's name.

The Klixon Kit contains everything for the job,—thermostat, safety pilot, 3-ply air-cell asbestos jacket and safety pilot parts.

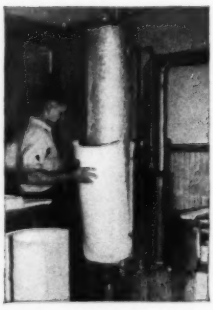


Photo shows the simple operation of insulating the boiler with the four piece asbestos jacket, making a handsome job when finished.

SPENCER THERMOSTAT CO.
Attleboro, Mass.

KLIXON

better constructed building from which less heat loss occurs.

Part of the heat escapes from a building through the action of air infiltration. Wind blowing on the windward side forces cold air into the cracks around the doors and windows, and the same weight of warm air is forced out of the cracks on the other side. This warm air must be heated by the heating system and represents a fuel loss directly convertible into dollars and cents. Placing insulation in the walls will not correct this condition. The remedy is to calk all cracks in the window frames and to either weatherstrip the windows or install tight storm sash.

The remainder of the heat escapes by conduction through the glass, and through the materials forming the walls and ceilings of the rooms.

VARIATIONS IN CONDUCTIVITY

The metals are the best conductors. Wood is a poorer conductor than stone, brick or concrete; and a dead air space, or one in which no air movement takes place, is practically the poorest conductor known.

Since the function of insulation is to prevent heat loss through the walls, floors, and ceilings, no evaluation of the benefit resulting from its use can be obtained without an understanding of the method for calculating such heat losses. The heat loss for a given type of wall is expressed in terms of an overall heat transmission coefficient, U, representing the number of heat units passing through one square foot of the wall in an hour when a difference of one deg. Fahr. is maintained between the temperatures of the air on the two sides of the wall. The commonly accepted formula for this coefficient, is:

$$U = \frac{1}{\frac{1}{f_i} + \frac{1}{f_s} + \frac{n}{c} + \sum \frac{x}{k}} \quad \ldots\ldots\ldots\ldots (1)$$

in which U = overall heat transmission coefficient, Btu. per sq. ft. per hr. per deg. difference in temperature from air to air.

f_i = inside surface film coefficient, Btu. per sq. ft. per hr. per deg. difference in temperature between inside air and inside surface (usually 1.34).

f_s = outside surface film coefficient, Btu. per sq. ft. per hr. per deg. difference in temperature between outside air and outside surface (4.02 for 15 mi. per hr. wind).

n = number of separately enclosed air spaces.

c = conductance of air space, Btu. per sq. ft. per hr. per deg. difference in temperature between the two enclosing surfaces (1.10 for spaces greater than one inch).

x = thickness of material, inches.

k = conductivity of material, Btu. per sq. ft. per hr. per deg. difference in temperature per inch of material.

$\Sigma \frac{x}{k}$ = sum of the separate values of $\frac{x}{k}$ for each of the materials composing the wall.

The values for f_i, f_s, c and k may be found in the American Society of Heating and Ventilating Engineers Guide for 1932 or in any handbook on heating. The total heat transmission per hour may be found from equation

$$H = UA\ (t_1 - t_2) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

in which H = heat transmission, Btu. per hr.

A = wall area, sq. ft.
t_1 = temperature of indoor air, deg. Fahr.
t_2 = temperature of outdoor air, deg. Fahr.

For the purpose of comparing the relative value of various types of walls, however, the calculation of the values of U is sufficient and will be used in this paper.

The ability of a material to conduct heat is expressed by the conductivity, k, or the heat conducted per square foot of surface per hour, per degree drop in temperature through one inch of material. This conductivity is a property of the material itself and is not influenced by the conditions of use. In general, low density, or weight per unit volume, is accompanied by low conductivity. Still air is a poor conductor, and the better insulating materials owe their value to the fact that they are porous and thus contain a large number of dead air cells. Most of the insulators on the market have about the same proportion of dead air cells and, therefore, their insulating values, for the same thickness of material, are not essentially different. For all practical purposes they could be divided into three classes having conductivities of 0.30, 0.35, and 0.40.

WHAT IS CONDUCTIVITY?

It should be particularly noted, however, that while conductivity is a property of the material alone, the overall heat transmission, which is a measure of the actual worth of the material in service, is determined by the conditions under which it is used. Commercial insulating materials are made in different thicknesses, and this fact, combined with the rather common practice of comparing such materials on the basis of conductivities only has resulted in considerable confusion and error. A simple example will illustrate the fallacy of comparisons based on conductivity alone.

Assume that two ½-in. sheets of insulation are to be used as a wall with still air inside and a 15-mile per hour wind outside. The conductivity of one sheet is 0.30 and of the other is 0.40. Judged by conductivity alone it might be assumed that one sheet would transmit $\frac{0.30}{0.40} = 0.75$ of the heat transmitted by the other. However, under the conditions of service, each sheet is protected by the air film on the two sides and the overall heat transmission as calculated from equation (1) gives results $U_1 = 0.376$ and $U_2 = 0.445$. From these it is evident that under the assumed conditions of service the better sheet transmits $\frac{0.376}{0.445} = 0.85$ of the heat transmitted by the other, instead of 0.75.

AUTOMATIC HEAT SECTION

What IS a modernized heating system?

It should include a stoker—or an oil-burner—but in all events it should include a Raymond Duo-Stat!

The stoker or oil burner cuts the cost of steam generation—but remember that this saving means little if the distribution is ineffective or improperly controlled.

Right there is where the Raymond Duo-Stat steps into the new picture of modernization. Its big saving—a **proved** saving*—is superimposed on any saving that can be made in the boiler room.

It is the only central control system that balances radiator temperature against outdoor temperature. As a result it is the first system that refuses to give the occupants of a building any more heat than is needed for comfort. It does this by partially filling radiators in direct proportion to heating needs—another result that has been repeatedly tried, but accomplished for the first time by the Duo-Stat. Partial filling is what gives low radiator temperatures for mild weather.

Use the Duo-Stat as a wedge to remodeling jobs

Never forget that controls are the key to extensive and profitable remodeling because they require free-circulating systems. The work involved in putting a system into good condition is more than justified by the big returns of the Duo-Stat savings because its savings have proved to be as great as controls costing five or ten times more can lay claim to.

At least ask for the complete story of the Duo-Stat—the most brilliant specialty in a drab year. Complete hook-up information and engineering data is available.

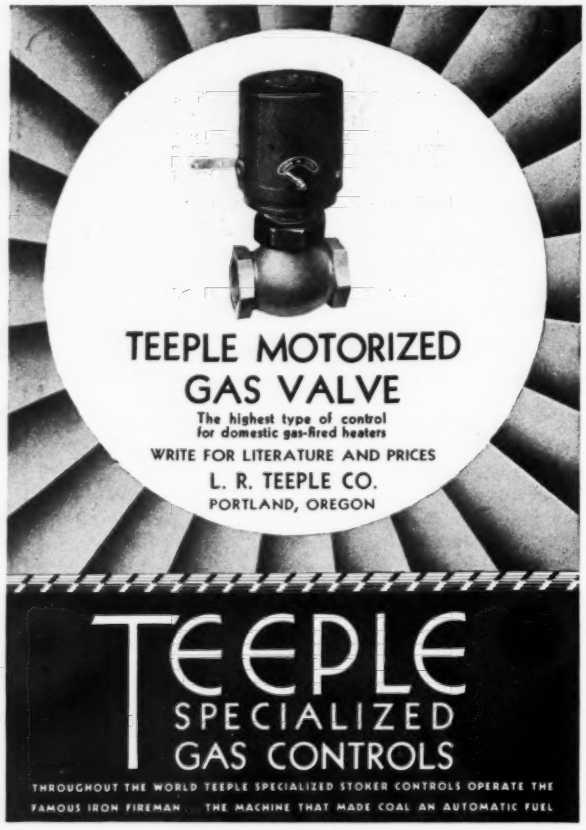
F. I. RAYMOND CO.
629 W. Washington Blvd., Chicago, Ill.

* The steam saving figures of buildings heated by metered steam can't lie. The meter readings of 22 Duo-Stat-equipped buildings in Indianapolis showed a saving of exactly 22.4% over former costs. All seasonal differences were corrected for. Ask for these and other proofs.

RAYMOND

DUO-STAT

AUTOMATIC HEAT SECTION


TEEPLE MOTORIZED
GAS VALVE
The highest type of control
for domestic gas-fired heaters
WRITE FOR LITERATURE AND PRICES
L. R. TEEPLE CO.
PORTLAND, OREGON
TEEPLE
SPECIALIZED
GAS CONTROLS
THROUGHOUT THE WORLD TEEPLE SPECIALIZED STOKER CONTROLS OPERATE THE
FAMOUS IRON FIREMAN — THE MACHINE THAT MADE COAL AN AUTOMATIC FUEL

Fuel PDM TANKS PITTSBURGH Oil
TANKS

Quality oil burner tanks for all types of installations—domestic, factory or bulk storage. Hydro-pneumatic tanks can be furnished in any size to your specifications.

Write today for our New Closed Tank Bulletin.

PITTSBURGH-DES MOINES STEEL COMPANY
3478 Neville Island, Pittsburgh, Pa.—Room 961, 270 Broadway, New York City

Gas—

(Continued from Page 103)

possible. The passages in gas-fired boilers are usually direct and offer little resistance to flow. The flue passages in coal-burning boilers, however, are generally tortuous, and when converted to gas fuel have been found sometimes to resist the flow of the combustion products more than gas-fired boilers. For this reason, unless considerable head room is available, the use of a draft hood with its elimination of all chimney draft may not be possible. Two examples will illustrate.

Sometime ago the writer used a draft hood such as shown in Fig. 4, for a conversion job. The vent pipe entered the chimney only about 5 ft. above the floor so that the draft hood had to be set directly on the boiler outlet. When the fire was started, it was found impossible to get enough air to the fire, so the hood was discarded and the check and pipe dampers regulated so as to give some chimney draft.

More recently the scheme was tried on a laboratory boiler where there was plenty of head room. First, the draft hood was set directly on the smoke box, and the result was the same as before; namely, it was impossible to get enough air to the fire even when the air door was wide open. The hood was then raised 27 inches by the use of a piece of pipe connecting it to the smoke box, and it was found then that the fire got plenty of air with the air door only three-quarters of an inch open. The hood was then lowered to within 8 inches of the smoke box, and operation was still satisfactory when the air door opening was about 2 inches. The virtue of such a scheme is that it provides a draft much less variable than that of the chimney.

DRAFT HOOD CONCLUSION

Thus it appears that a draft hood to eliminate the variable chimney draft can be used satisfactorily on a conversion job provided it can be installed high enough above the boiler. The height necessary depends on the amount of draft required.

It has already been shown that all air leaks above the fire must be stopped, to insure good mixing of gas and air. It is of almost equal importance that leaks below the fire be stopped, so that all air entering the combustion chamber is under control. It is necessary, therefore, to stop all leaks before attempting to adjust the burner.

It will be assumed here that the gas flow rate has been set to heat the house properly, and the adjustment of the air supply only will be considered.

Some gas burners have only one air adjustment. Others have two; namely, the primary air which, small in amount, mixes with the gas before it reaches the burner; and the secondary or main air supply, which reaches the flame at the burner. These should be easily recognized without further description.

Adjustment of the primary air regulates the height of the flame—more air gives a shorter flame. It is generally conceded that a short flame gives somewhat better efficiency than a long one; hence the former is desirable. Safety, however, places a limit on the amount of primary air which can be admitted. Too much primary air forms

a combustible mixture in the burner, causing the flame to backfire into the burner tube. The primary adjustment, therefore, while giving a short flame, must not be carried so far as to allow any possibility of backfire.

Satisfactory adjustment of the main air supply can be made in only one way; that is by analyses of the stack gases for percentages of carbon dioxide and oxygen by means of an Orsat apparatus, which is too well known to need description here. It is practically impossible to adjust a gas burner by eye or smell and be sure of getting the adjustment anywhere near correct. Hence this discussion of air adjustment will refer only to the use of the Orsat tests.

The Orsat apparatus uses chemicals to absorb, successively, the carbon dioxide (CO_2), oxygen (O_2) and carbon monoxide (CO) in the stack gases. The last named indicates incomplete combustion and can never be tolerated. It has been shown, ("Short Cuts to Combustion Efficiency with Natural Gas," by L. C. Price, Circular No. 3, Arkansas Engineering Experiment Station), however, that when the composition of the fuel gas is known, a test for CO is unnecessary, and that when the percentage of CO_2 is at its maximum, CO is not present except possibly in negligible amounts.

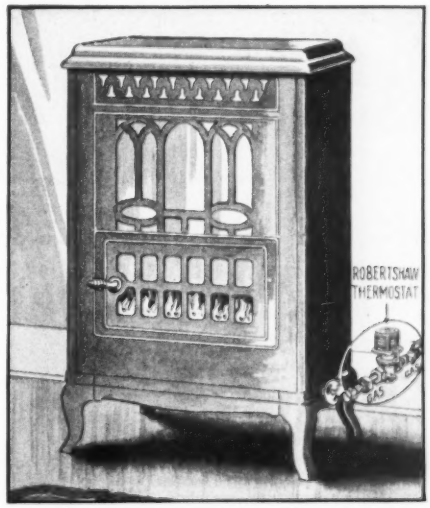
POINTS ON COMBUSTION

Space does not permit a detailed discussion of the chemistry of combustion here. Suffice it to say that the percentage of CO_2 and oxygen in the flue gas indicate the excess or deficiency of the air supply, and that the best efficiency is obtained when the CO_2 percentage is at its maximum. When the composition of the fuel is known, the excess or deficiency of air can be calculated corresponding to various flue gas analyses, and the theoretical maximum percentage of CO_2 can be determined. For instance, when burning pure methane (CH_4), 10 per cent of CO_2 and 3 per cent oxygen indicate an air excess of about 15 per cent and the theoretical maximum possible CO_2 is 11.7 per cent. The latter figure is never obtainable in practice, due to inability of burners to mix the gas and air perfectly. The gas supplied to the city of Fayetteville, Arkansas, contains about 98.5 per cent CH_4. When burning this gas in exceptionally good conversion installations, the writer has sometimes been able to get a CO_2 figure as high as 11.2 per cent, corresponding to about 4.5 per cent excess air. Fig. 3, plotted from the same data as Fig. 2, shows the relation between efficiency and percentage of CO_2 in the flue gas. It is very evident that best efficiency is obtained simultaneously with the maximum possible percentage of CO_2. It will also be noticed that the same CO_2 reading may be obtained with either excess or deficient air, so that CO_2 alone does not indicate whether the air supply is too much or too little. Both CO_2 and oxygen figures are necessary to give that information; the oxygen content is always greater when the air is in excess. It will be noticed, further, that for any given CO_2 figure, the reduction from maximum possible efficiency is always about twice as great when the air supply is deficient as when it is in excess. This refers to air used by the fire and not to the total air supply. The distinction is necessary because the mixing factor is always less than 100 per cent.

From the above discussion, it is evident that the

ROBERTSHAW
SPACE HEATER
thermostat

AUTOMATIC HEAT SECTION

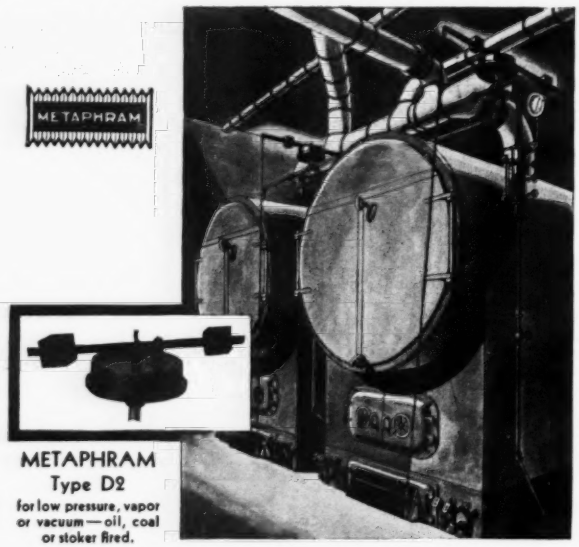


CONTROLLED HEAT

is just as important, for both health and economy, in the space heater as it is in all other gas-fired heating plants. ▲ It is mighty easy to install . . . and it means extra profits on every installation. It is accurate and automatic, small and compact, durable and trouble-proof. You can add it to any space heater, new or already in use. ▲ This Robertshaw Thermostat is furnished with the new non-clog by-pass, which controls the minimum burner or by-pass flame. Be sure you know the extra money this popular thermostat will bring you this season.

WRITE
FOR FREE
FOLDER AND
INSTALLATION FACTS
ROBERTSHAW THERMOSTAT CO.
Youngwood, Penna.

AUTOMATIC HEAT SECTION



METAPHRAM
Type D2
for low pressure, vapor or vacuum — oil, coal or stoker fired.

METAPHRAM Gradual Control
covers the entire range of domestic hot water and low pressure boilers and tank heaters, either gas, oil or coal fired.

Descriptive Bulletins on Request

NATIONAL REGULATOR CO.
2317 KNOX AVENUE CHICAGO

GET IN ON
"The Big Swing"
TO
AUTOMATIC HEAT

Heating men everywhere are turning to the pages of AUTOMATIC HEAT in DOMESTIC ENGINEERING for the type of information you find in the pages of this issue.

Technical discussions on stokers, oil burners, gas heat and their accessories; merchandising stories packed with worthwhile sales help and articles which assist with financing.

These are the things which you will find in AUTOMATIC HEAT, the paper that will get you in on the big swing to automatic heat that is just getting under way. Don't miss a single issue . . . . .

Read —
AUTOMATIC HEAT
in every issue of
DOMESTIC ENGINEERING

adjustment of the main air supply to a conversion gas burner must involve several trials, in order to determine what setting of the air door (and pipe dampers, if a draft hood is not used) gives the highest possible percentage of CO_2 in the flue gas. When that figure is reached, the efficiency of the installation is at its maximum. Variable draft conditions, however, make it inadvisable to leave the air door at this setting. It must be opened a little further to insure that future adverse drafts will not reduce the air supply below that necessary for complete combustion. The writer's experience indicates that as a rule, it is satisfactory to open the air door until the CO_2 figure is ½ per cent below the maximum when a draft hood is used; otherwise 1 per cent below the maximum.

The logical procedure in adjusting the air supply, therefore, is to try several settings, analyzing the flue gas with each setting, until that position is found which gives maximum possible CO_2. Then, if a draft hood is used, open the air door until the CO_2 falls to ½ per cent below maximum. If adjustment is by means of stack and check dampers, increase the air supply until the CO_2 is 1 per cent below maximum.

EXCESS AIR ADVISABLE

It is thus evident that the amount of excess air advisable depends entirely on the completeness of mixing of gas and air, and on the variableness of draft. Where 10½ per cent CO_2 would be safe with a good burner properly installed, 9 per cent might be risky or impossible with a bad job. Each case requires individual study.

The setting of the air flow rate as outlined above will give proper air supply at only one rate of gas flow.

The foregoing discussion has attempted to show that installation of conversion gas burners will be most economical of fuel when the following recommendations are complied with:

The burner must be installed as low as possible in the combustion chamber, and the flame and hot gases must be made to hug the boiler walls and flue passages as closely as possible.

The burner must be accurately centered in a round boiler and in all cases the air space between the burner and the boiler wall or baffles should be the same on all sides.

The passage of all useless air through leaks and any open spaces in or around the burner must be stopped.

The use of a draft hood is recommended wherever possible. As much as possible of the chimney draft should be eliminated.

The satisfactory adjustment of the air supply is possible only with the aid of an Orsat apparatus to determine percentages of CO_2 and oxygen in the flue gas. Maximum possible CO_2 gives best efficiency. Safety demands that additional air be admitted until the CO_2 is lowered ½ to 1 per cent below maximum.

Automatic control is highly desirable. Where this control is of the on-and-off type, it must close the air door when the gas is off.

Finally, there are so many different types of conversion burners to be installed in so many different boilers and furnaces that each case requires individual study and treatment if best efficiency is to be obtained from it.

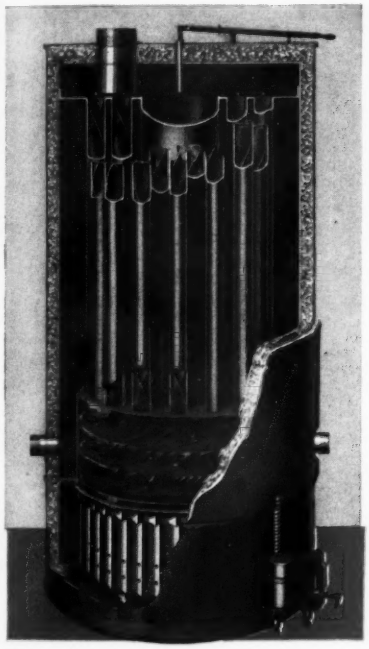
THIS NEW WAY OF BURNING OIL

applied to a new series of MW Matched Automatic Boiler Units, helps dealers' sales and profits

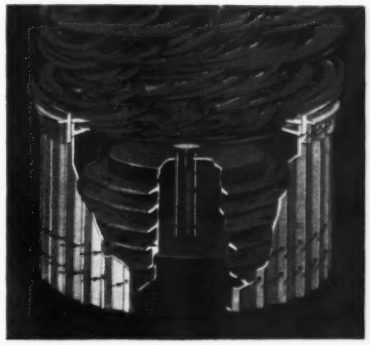
"Demonstrate the new Gyro-Flame units to a real prospect, and you've got it half sold," writes one dealer, voicing the experience of MW merchants everywhere.

As a business getter the new, marvelous Gyro-Flame Burner installed in a new series of radically improved MW Boiler Units for Steam and Hot-Water Heating, is without equal.

The operation of this epoch-making burner—in which a furiously rotating yet silent flame of tremendous heat is maintained without the use of a single moving part—keeps prospects curious, spellbound, interested. And this interest certainly speeds up our dealers' business in the famous year-round selling line of MW Automatic Oil-Burning Utilities.



Heat generated by the furiously gyrating flame of the new MW Gyro-Flame Burner is kept in rotary upward motion by spiral baffles extending the full length of the vertical tubes. Having reached the top, the heat is drawn downward again through a large center tube. Complete heat utilization is assured in this manner.—Listed as Standard by Underwriters' Laboratories.

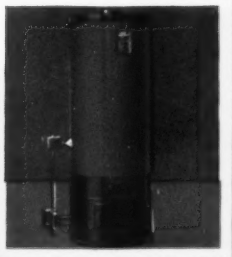


The gyrating motion of the flame is fully under way when the air stream enters the combustion chamber through holes set at a tangent. This motion is greatly intensified and "stabilized" when the rotating air streams strike the ingeniously contrived circular baffle.

The MW dealer franchise is a profit-building proposition liberally gauged to present-day economic conditions. Write for details today, using the coupon below.

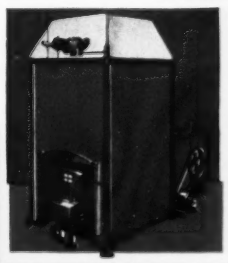
AUTOMATIC MW OIL-BURNING BOILER UNITS

PRODUCTS THAT SELL SPRING, SUMMER, FALL, WINTER



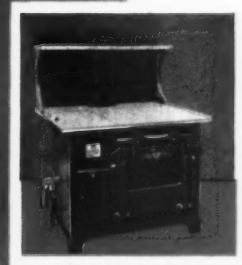
MW OIL-BURNING RANGES

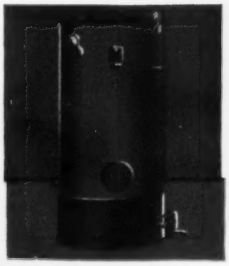
Two types—for homes, restaurants, lunch rooms, roadside stands, hotels, clubs, etc. Quick, clean, uniform, controlled heat—the better, more economical way of cooking, frying, roasting, baking.



MW AUTOMATIC WATER HEATERS

Domestic and commercial models. For apartments, schools, shops, factories and battery installations. Supply hot water at lowest cost. Listed as Standard by Underwriters' Laboratories.





MW "AUTOMATIC HEATING CONTROL UNITS"

Round and square types. Warm air in Winter, cool air in Summer. Low cost and economical upkeep. Most popular air-conditioning unit on the market.—Listed as Standard by Underwriters' Laboratories.

MW AUTOMATIC BOILER UNITS

Heating with steam or hot water. Incorporate the amazing oil-burner development—the new, super-efficient MW Gyro-Flame Burner. Small and large capacities.—Listed as Standard by Underwriters' Laboratories.

MOTOR WHEEL CORPORATION, DEPT. B
HEATER DIVISION, LANSING, MICH.

Please send me full information describing the MW line of oil-burning utilities, and explaining its sales and profit opportunities.

Name.....

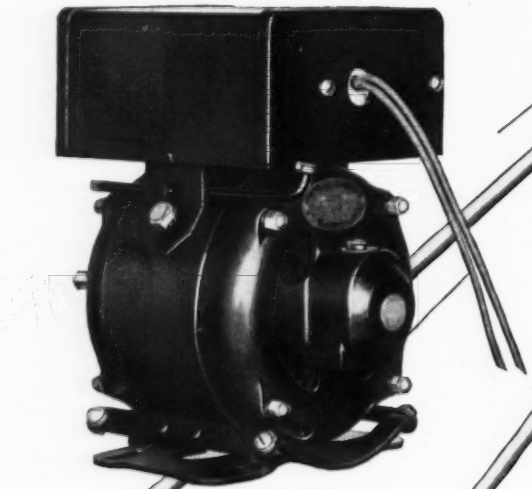
Address.....

City..... *State*.....

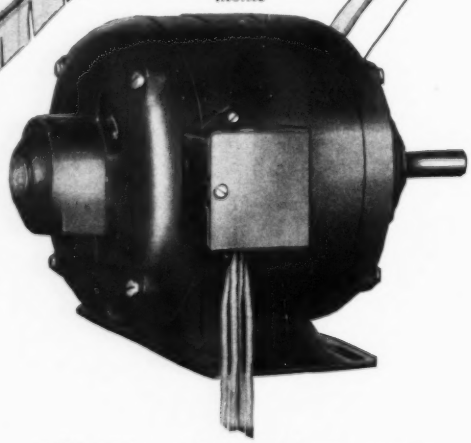
AUTOMATIC HEAT SECTION

TWO GREAT HITS

RIGHT FROM THE START



TYPE KC . . . famous capacitor-motor, engineered to meet modern oil-burner requirements



TYPE KH . . . a dependable resistance split-phase drive definitely matched to the characteristics of the modern oil burner

TWO great oil-burner drives have scored from the start . . . the Type KH and the Type KC. They have scored again and again on brilliant performance, dependable operation, and incomparable suitability for the job.

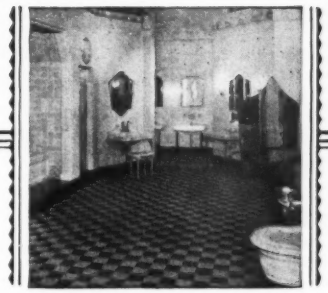
Investigate these proved power units. Compare each with your own conception of a perfect drive. You'll find them simple in construction, unusually quiet in operation, and high in efficiency. And remember, whether you use standard or highly special motors, General Electric application engineers will always be glad to coöperate in solving your drive problems. There's a G-E office near you; "look into" G-E motors.

219-178

GENERAL ELECTRIC

SUPPLY NEWS

FOR MANUFACTURERS, WHOLESALERS, SALESMEN



New Orders Bring Reopening of Plumbing and Heating Manufacturing Plants

Crane Co. Re-opens Plant

Crane Co. has just reopened its boiler and radiator plant at North Tonawanda, N. Y., after an extended shut-down. Several hundred men have been called back to work.

Pierce, Butler & Pierce Mfg. Corp. Calls 300 Men Back to Work

Pierce, Butler & Pierce Mfg. Corp. of Syracuse, N. Y., has just reopened its Eastwood plant, which was closed last March. This means that three hundred men have been called back to work.

Reopen Johns-Manville Mill

Johns-Manville, New York, manufacturer of insulating products, has reopened one of its large mills. This is the Nashua, N. H., plant and it had been closed for about a year.

Modine Mfg. Co. Re-employs 150 Men

Modine Manufacturing Co., Racine, Wis., manufacturers of radiators and heating and cooling units, has called back 150 of its employes and it is expected that most of the men re-employed will be on the job for the greater part of the summer.

Reading Iron Co. Expands Production

Reading Iron Co. of Reading, Pa., has just resumed operations at its Reading finishing mill and charcoal iron plant. About 200 men have been called back to work.

Receives Large Orders

The Young Radiator Co., Racine, Wisc., through its president, announces the receipt of a large contract for oil temperature regulators for immediate delivery. This company announces that it is also working on the production of units for car heaters, the largest order it has ever received for this commodity, which will bring a steady production through the department manufacturing them for the next six months without interruption.

A constant production is also being maintained in a department especially designed for the production of air-conditioning copper heat transfer components, a new field which this company has entered. In addition, the company manufactures unit heaters with fans and motors for space heating and copper convection heaters with cabinets and enclosures for homes, buildings and room heating.

U. S. Rubber Co. Employs More Workmen

Reports from Naugatuck, Conn., tell of a large number of workmen re-employed through the opening of the plants of the United States Rubber Co. after a two weeks' shutdown. Officials at the plant report sufficient orders on hand to assure a good operating schedule until the first of next year.

Advances Prices on House Heating Boilers

The Spencer Heater Co., Williamsport, Pa., announces an advance of 5 per cent on the list price of its house heating boilers, effective Aug. 15. The Spencer Company, a division of the Cord Corporation, manufactures a non-mechanical automatic feed boiler for burning small sized low priced anthracite coal or coke as well as heating boilers, burning all kinds of fuels and for all sizes and types of buildings.

$700,000 in New Orders

The Mullins Mfg. Corporation, Salem, Ohio, announces receipt of $700,000 in orders for its refrigerating, washing machine and automobile divisions. Additional men have been re-employed and others are to be recalled shortly.

Opens New Distributing Branch

The National Lead Co. has just leased quarters at Seattle, Wash., in order to open a new branch, storage and distributing plant there.

Pierce, Butler & Pierce Move Offices Back to Syracuse

Pierce, Butler & Pierce Manufacturing Corporation has remodeled the Pierce building at 282 James street, Syracuse, N. Y., and has moved its executive offices back into this building, from which they were transferred to New York City in 1915, seventeen years ago. The entire ground floor will be used for display purposes. This concern was founded in Syracuse in 1839.

Unite Silent Glow and International Burners Corporations

The Silent Glow Oil Burner Corporation of Hartford, Conn., has purchased the International Burners Corporation of New York City, with the result that the three oil burners made by the latter concern will hereafter be manufactured in Hartford, Conn., by the Caloroil Burner Division of the Silent Glow Oil Burner Corporation. The Caloroil Burner Division will have a separate sales division and there will be no change in the dealer set-up or in the territory. Its engineering, manufacturing and sales organizations will have their headquarters in Hartford under the supervision of M. J. Binkley, who was vice president of the International Burners Corporation.

Thermoil Heaters, Inc. Now in New Plant

Thermoil Heaters, Inc., Benton Harbor, Mich., is now located in its new plant on West Main street, Benton Harbor, where general offices, research laboratory and factory have been combined in one building.

Opens San Francisco Sales Office

Revere Copper and Brass Incorporated has opened a sales office in San Francisco at 1615 Raess Building, in charge of R. H. Binns, Jr., Pacific Coast manager. Mr. Binns was formerly assistant sales manager of the Rome Division of Revere, and before that engaged in the metal distributing business.

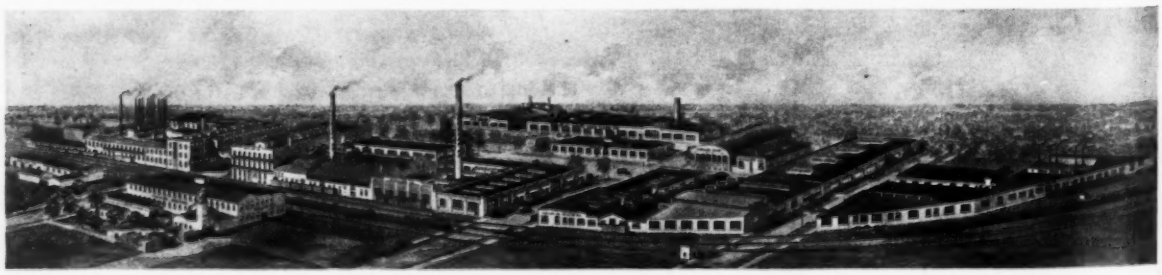
Mueller Co. Celebrates 100th Birthday of Founder On Its Own 75th Anniversary

THE officers and the employes of the Mueller Co. of Decatur, Ill., and their families, numbering more than 3,000 persons, held their annual picnic at Mueller Heights, near Decatur, on Saturday, July 16, in commemoration of the 100th birthday of Hieronymus Mueller, the founder of the company, and celebrating its 75th business anniversary.

Hieronymus Mueller was born in Wertheim, Germany, July 16, 1832; came to America in 1849, and to Decatur in 1857, in which year he opened his first shop on Main street in that city. In the beginning, Mr. Mueller was a gunsmith and a locksmith, and in a small way dealt in firearms and ammunition. He served not only Decatur residents, but enjoyed a reputation as a first class workman throughout the county. Mr. Mueller's skill made such an impression on his customers that many of them engaged him to make their fowling pieces by hand. Several of these hand-made guns are still treasured by their owners in Macon county.

Fifteen years later—in 1872—Mr. Mueller built his first factory at State and East Main streets, from which the company operated until 1895, when the first unit of

At the right, Hieronymus Mueller, the founder of Mueller Co.—Below, his first shop, which he opened in 1857.—At the bottom of the page, Mueller Co.'s main plant, as it looks today



W. E. Mueller
Executive vice president and treasurer

Adolph Mueller
President and general manager

Robert Mueller
Vice president in charge of public relations

the present factory was erected at the corner of College and Cerro Gordo streets. This was a two-story brick building. The next step was the addition of the warehouse, general office building and power plant which were erected in 1903. Even then, the Mueller Co. was regarded as one of the leading industrial institutions of Decatur, and it is now the only company in that city which has been in business 75 years.

The present development carries the company from a point midway on Cerro Gordo street to the western extremity of the property which reaches nearly to Eldorado street. There are Mueller buildings on both sides of Cerro Gordo street, but the main stem of the plant follows the Wabash railroad, and the extent of the improvements made cannot be judged from the view obtained on Cerro Gordo street. The large pottery and iron foundry buildings are segregated from the main plant.

About twenty years ago the Mueller Co. established a branch factory at Sarnia in Ontario, Canada, to manufacture its products for the Canadian trade. A few years later another plant was established at Port Huron, Mich.

Mueller Heights, where the picnic was held, is one of the finest privately owned recreational parks in the Middle West, with its 1600 acres of wooded knolls, green lawns, shaded lagoons, vine-covered and tree-shaded lodge, and its natural amphitheater. This park is located on Lake Decatur, and it was some years ago a cherished plan of Adolph Mueller and his brothers to change it into a model town, Muellerville; but the cancellation of a huge war contract by the Dominion of Canada compelled the company to spend millions of dollars in establishing a new plant which took the money destined for the building of Muellerville. In the place of Muellerville there is now Muellers Heights, developed as a playground for the employes of the company.

For the centennial celebration of the birth of Hieronymus Mueller a replica of his first shop in Decatur was erected here, equipped with the kind of machinery used in 1857. One of the old guns sold by Mr. Mueller in 1871 was also shown.

The picnic opened with a golf tournament at 8 o'clock in the morning. During the forenoon the children were entertained with pony rides. At noon lunch was served. A fine entertainment was given at the open air theater during the afternoon. A large program of sports was carried on at the same time, including many interesting contests as well as a baseball game.

In the evening during a two-hour band concert the

J. W. Wells
Secretary and assistant to president

R. H. Mueller
Division of research and development

L. W. Mueller
Vice president and works manager

J. W. Simpson
Vice president in charge of sales

picnickers enjoyed their supper. Members of the Mueller family gathered on the lawn by the lodge for their picnic supper and had one of the most complete reunions of the family. Present from out of town were Mr. and Mrs. Frederic E. Schluter of Greenwich, Conn., and Oscar B. Mueller and his son, Bernhard, from Port Huron, Mich.

THE TRIBUTE TO THE FOUNDER

At eight o'clock in the evening the open air theater was packed with a crowd of more than 2,000, to hear executives of the Mueller Co. speak in commemoration of Hieronymus Mueller, who started the business in 1857 and guided its destiny for 43 years until his death, March 1, 1900.

Adolph Mueller, president of the company, delivered an address on "Father as a Business Man," in which he spoke about the obstacles which faced Hieronymus Mueller in founding and building up his business in Decatur, and the ways in which he overcame them. By constant application to his business, he became of more and more importance to the community. In 1871 he was appointed supervisor of the installation of water service and plumbing. In was in the exercise of this duty that he found the need for a method of tapping water mains without shutting off the water, and developed the tapping machine which is still manufactured by the company. In the same way he perfected the water pressure regulator after eight years of unrelenting effort.

Mr. Mueller also emphasized the point that the Mueller Company has always been a thoroughly American organization since the day it was started. Never has it hired a man who was not or did not intend to be an American citizen. Robert Mueller, vice president of the Mueller Co., told of "The Home Life of the Mueller Family."

A. G. Webber, a general apprentice in his shop from the age of 16 to 19 years, in speaking of "Hieronymus Mueller as I Knew Him," said: "One of his characteristics which I best remember, was his look of satisfaction and pride in any work of his when he delivered it. From himself as well as from his employes he expected precision and accuracy."

THIRD GENERATION TAKES UP TASK

Speaking for the members of the third generation of the Mueller family, Lucien W. Mueller, vice president and works manager of the company, said in his address on "Our Responsibilities": "We have been prepared like the second generation, and we pledge our best efforts to pick up the work as it comes to us from our fathers, and we will carry it on to the best of our abilities."

J. J. Maloney, president of the Decatur Association of Commerce, extended congratulations from his organization to the officials of the Mueller Company. They are: Adolph Mueller, president and general manager; Robert Mueller, vice president in charge of public relations, both members of the second generation; William E. Mueller, executive vice president and treasurer; Lucien W. Mueller, vice president and works manager, and Robert H. Mueller, division of research and development—all three members of the third generation; J. W. Simpson, vice president in charge of selling, and J. W. Wells, secretary and assistant to the president. Two other members of the third generation, Ebert Mueller and Frank Mueller, are also identified with the company.

At the Mueller Golden Anniversary in 1907 the Mueller Co. inaugurated awards of $500 to men in recognition of their completion of 20 years of loyal service. Later an additional $1,000 with 10 weeks absence on pay was given to employes who completed 35 years of loyal service. Under this policy 177 men have been recognized at an expense to the company of $100,000.

It is also of interest to note that of the men who worked with Hieronymus Mueller, nine are still in the employ of the company, their period of service being from 33 years and up to more than 52 years.

National Makes Sawade Assistant Sales Manager

Carl A. Sawade is now assistant general manager of sales of the National Radiator Corp., Johnstown, Pa. News of the promotion is announced by Charles L. Crouse, vice president and general manager of sales.

Mr. Sawade has a thorough training, extending over a period of 20 years, in heating sales, credit, advertising and engineering work. Originally employed in a credit and sales capacity with the United States Radiator Corp., he later served for some years as sales manager of the Continental Heater Corp. Since the consolidation of this, and four other companies with National in 1927, he has been connected with National Radiator as sales engineer and sales promotion manager.

Carl A. Sawade

In his new capacity, Mr. Sawade will continue in charge of sales promotional activities, spending time with the various National district offices, and co-operating with various contractors in devising sales and advertising aids to solve individual problems. His activities will be primarily concerned with the home modernization market, because of the millions of homes at present inadequately heated.

Speakman Company Opens Display Room in Philadelphia

Speakman Company of Wilmington, Del., has opened a display room on the second floor of the Architects building, at 17th and Sansom streets, Philadelphia, where various types of this company's products will be on permanent exhibition. The display room is in charge of James E. Conley.

Will Move Its Two Plants to Holland, Michigan

The Automatic Burner Company is making arrangements to move its plants in Chicago and in Galesburg, Ill., to Holland, Mich., where it will be possible to consolidate the two plants under one roof. The new plant will employ about 100 men and it will start operation some time in the fall. In making the change thirty families will move from Chicago and Galesburg to Holland, Mich.

Petroleum Heat & Power Co. Opens Branch in Boston

The Petroleum Heat & Power Co. of Stamford, Conn., has opened a factory branch sales office at 415 Boylston street, Boston, Mass., to serve the Boston territory. J. Henry Brody is sales manager of the new branch, and J. L. Miller is his assistant. A. L. Jewett, J. A. Slaman, J. R. Couthard, A. C. Hatch and P. B. Waters are also associated with this branch.

Appointed Agents in Greater New York Territory

Standard Tank & Seat Company, Camden, N. J., has announced that Earl K. Williams and Organization, manufacturers' agents, at 280 Madison Avenue, New York City, are handling its line of seats in the metropolitan New York territory.

Closes Three Branches

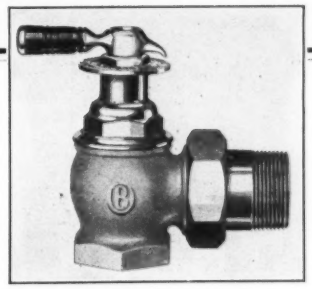
J. D. Johnson Co., Inc., Brooklyn, N. Y., plumbing and heating wholesaler, has temporarily closed three of its branches. The business of its Newark, N. J., plant will be handled through the Brooklyn office, of its Waterbury, Conn., branch through the Bridgeport, Conn., office, and of its Williamsport, Pa., branch through the Harrisburg, Pa., office.

Laclede Stoker Co. Expanding

The Laclede Stoker Co. of St. Louis, Mo., has been incorporated with a capital of $300,000 to take over and expand the company of the same name at 4438 Hunt street, St. Louis. Henry F. Welch is at the head of the new company.

Has Opened Branch Sales Offices in Philadelphia

The Midland Tube & Pipe Co. of Bordentown, N. J., has opened a branch sales office in the Barker building, 18 West Chelten avenue, Philadelphia, Pa., and has appointed Albert C. Masche as district sales manager.

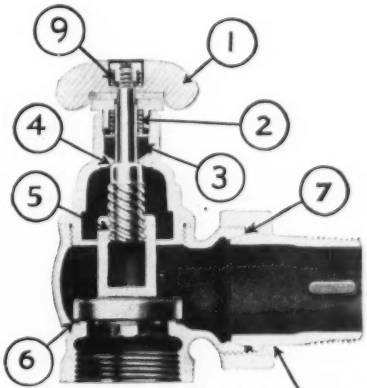


Graduating angle type with union; lever handle; No. 36 line packless steam radiator valve.

Merchandise of Today in Beauty, Performance and Price

IN its beamy brilliance this packless radiator valve is styled to harmonize with modern beauty in home and office. It is popular with contractors who are "on the make" because it looks exclusive and expensive to customers. Its performance is in keeping with its good looks and with the fair reputation which most successful contractors expect Ohio Brass valves to maintain.

Ask your wholesaler to supply you with Ohio Brass packless radiator valves—then you will be fortified with 1932 beauty, performance and price in your 1932 business-getting and business-holding efforts.



Sectional view. Angle type with union; composition wheel handle; No. 35 line packless steam radiator valve.

1558V

OHIO BRASS COMPANY
Mansfield, Ohio, U.S.A.

New York City · Philadelphia, Pa. · Chicago, Ill.
WM. P. HORN CO., Los Angeles, San Francisco, Seattle

The "PROFIT IN THE MAKE UP" Line

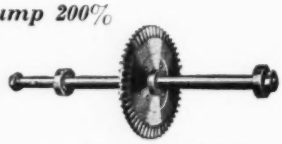
Disassembled view showing Westco's Impeller, Patented Removable Liners and Casings.

WESTCO LEADS

Turbine Pump field with amazing New Engineering Development!

1932 sales jump 200%

WESTCO realizes that it takes more than low prices to sell mechanical equipment this year. It takes *extra value* in the form of sensational new features to "catch" the buyers today. And Westco dealers are "catching" their rightful share with a product that is a stride ahead of the times in quality, performance, features and price.



Westco's *only* moving part—its multi-vaned impeller

Heading the list of Westco selling features are its *patented* **Removable Liners.** These **Liners** allow the capacity to be increased or decreased without disturbing the installation. This advanced feature has another valuable advantage because, in the **Liners** you have the essential elements that accomplish the pumping. In this way no wear can possibly occur so far as the casings are concerned and there is no reason why the casings should not last a lifetime. Every dealer readily sees what a powerful sales aid this is because, if foreign matter should accidentally enter the pump chamber and cause wear, the pump can easily be made just as good as new. Simply replace the **Removable Liners.** This job costs but little and can be quickly done on the premises.

Don't be satisfied with anything less than genuine Westco performance. So *demand* Westco, the *original* turbine-type pump with **Removable Liners.**

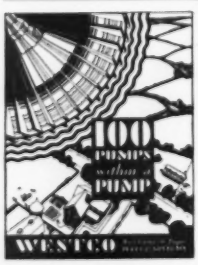
All Westcos have Automatic Air Volume Controls; are Self-priming and quiet in operation. They are absolutely free from the usual "water-hammer" and pounding in the pipes. Successful operation guaranteed on suction lifts as high as 28 feet. Lubrication necessary only once a year.

Westcos are built in a complete range of sizes with capacities from 250 to 3000 gallons per hour. Electric motor or gasoline engine driven. It's easy to be the leading water system dealer in your locality when you handle the Westco line with its Money-back Guarantee. Remember, Westco Franchises are *exclusive* Franchises. *So act quick!* Sign the coupon below and *mail it today* for FREE, colorful Catalog and new, low Price List which are just off the presses.

Westco Pump Corporation
Davenport, Iowa
Branches: New York, Chicago and San Francisco.

Jobbers in 50 Principal Cities

WESTCO JUNIOR
No. 25
250 *to* 350 *g.p.h.*
$80 f.o.b. Factory
Slightly Higher on Pacific Coast



COUPON *BRINGS* CATALOG

WESTCO PUMP CORPORATION
Davenport, Iowa, Dept. D-8.

Gentlemen: Without obligation please send me FREE Westco Water System Catalog and Price List.

Name.....
Address.....
City.....
State.....

WESTCO *TURBINE* PUMPS

Appoints 100 Distributors

J. L. O'Brien, general manager of the Toridheet Division of the Cleveland Steel Products Corporation, Cleveland, Ohio, announces that nearly one hundred new dealers and distributors have been appointed during the first seven months of this year.

Recent additions to the Toridheet distributing organization include the appointment of the following dealers and distributors: New Haven Toridheet Co., 62 Franklin St., New Haven, Conn.; J. L. Larson, 220 East 6th St., Sandwich, Ill.; Allied Oil & Burner Co., Guarantee Title Building, Cleveland, Ohio; Mike Kubisiak, 120 Grand Avenue, Wisconsin Rapids, Wisc.; Gunther Hardware Co., 505 Hampshire St., Quincy, Ill.; Little & Haggerty, Inc., 16 Housatonic Ave., Derby, Conn.; General Oil Burner Service Co., 520 Washington St., Norwood, Mass.; Universal Oil Burner Co., 27 North Broadway, Nyack, N. Y.; R. C. Weik, Bristol, Pa.

Worthington to Consolidate Cincinnati With Buffalo Plant

Worthington Pump and Machinery Corporation, with executive offices at 2 Park avenue, New York City, and general offices at its Harrison, N. J., works, has decided to transfer and consolidate the designing, engineering and manufacturing activities carried on at its Cincinnati, Ohio, works with those at its Buffalo, N. Y., manufacturing plant. This move will in no way affect its Cincinnati district sales office, which is in charge of Earl Vinnedge.

Three Air Conditioning Concerns Recently Organized

The Pacific Air Conditioning Corporation of Los Angeles, Calif., has been organized by H. S. McClelland and Lester A. Todd, both of Los Angeles, to manufacture air conditioning equipment and systems.

The Johnson Air Conditioning Corporation, of Crown Point, Ind., has been organized by A. J. Johnson and K. E. Whitman, both of Crown Point, to manufacture air conditioning systems.

The Betz Unit Air Cooler Co. of Kansas City, Mo., has been organized to take over and continue the business of a company of the same name at 6 West Ninth street, manufacturer of air conditioning equipment. E. M. Metcalf is at the head of the new company.

Crown Die & Tool Co. in New Location

Crown Die & Tool Co. of Chicago has moved its factory and office from 2634 North Keeler Avenue to 267 North California Avenue.

Appointed Sales Representatives in Worcester and Vicinity

The Davis Engineering Corporation of New York City has just added the Arthur S. Hall Company to its staff of sales representatives for its line of domestic hot water heaters in Worcester, Mass., and vicinity. The Hall company is located at 12 Tecumseh street, Worcester.

Fan Manufacturers See Danger in Loose Definition of Air Conditioning

At the last meeting of the National Association of Fan Manufacturers held in the Bismarck Hotel in Chicago recently, one of the important subjects discussed was the matter of air conditioning.

There are at the present time between 150 and 200 manufacturers of air conditioning equipment in this country, and the fan manufacturers discussed the probability that with all of the various designs of air conditioning equipment now offered, the public, lacking technical knowledge, might in many cases invest under the wrong assumption of what it was actually purchasing. "Air conditioning" is a general term, and it was agreed that it was too general for the needs of the industry. According to the dictionary definition of the words, it is quite probable that nearly all of the several hundred manufacturers offering such equipment are within their rights from a technical and legal standpoint. However, it was pointed out that air conditioning includes the following factors:

1—Heating; 2—Cooling; 3—Humidifying; 4—Dehumidifying; 5—Cleaning; 6—Odor removal; 7—Production of air motion; 8—Ventilation.

The non-technical public purchasing equipment under the general term of "air conditioning," without expert advice, has no means of knowing what conditions will be produced by the apparatus bought nor whether pre-determined conditions might be satisfactory to the purchaser or not.

It was agreed that some publicity for the benefit of the public would be in order so that it might be educated to ask for what it wanted and required. As a matter of fact, an ordinary heating system with a boiler and a radiator is an air conditioning system within the dictionary definition of the term. However, if a buyer contracts for and actually gets a heating system and expects nothing else, he should be satisfied. But if the purchaser of equipment is induced to buy a disc fan under the assumption that it is going to cool a theater to the extent that lithographs of icicles and mountain peaks can honestly be placed in front of the theater to catch the public, then both the buyer and the public will be disappointed. If a fan and air washer are installed in the belief that comfortable conditions will be maintained in a building in all kinds of weather in any part of the country, the chances are not always good for satisfactory results.

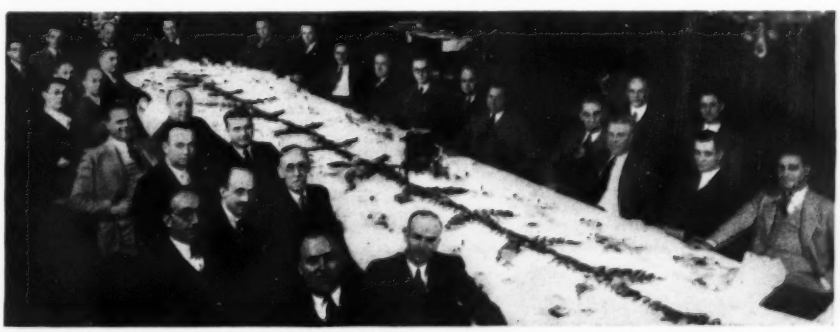
It is not essential in every case that every factor of air conditioning mentioned must be supplied for the satisfaction of the buyer purchasing the equipment, or the public enjoying it. It is, however, essential for the good will of the business and its consequent development that the buying public be educated to the extent that it will get approximately what it conceives it is paying for and within the limitations of agreement in the engineering profession. A satisfactory cooling and dehumidifying system should be sold and delivered if the customer's requirements demand it. If only a humidifying system is wanted, or if only a heating system is required, then whether these systems are sold under the name of "air conditioning" or not is not important, but the buyer should have sufficient knowledge of the subject to know whether or not, if he is dealing with a responsible concern, he is going to get what he expects to pay for.

Methods of disseminating information relating to this subject so that it can be absorbed by the public were discussed with the idea that the tremendous public interest in this general subject should not be dulled by unethical sales methods nor ignorant selling or buying of equipment designed for the new conception of human comfort.

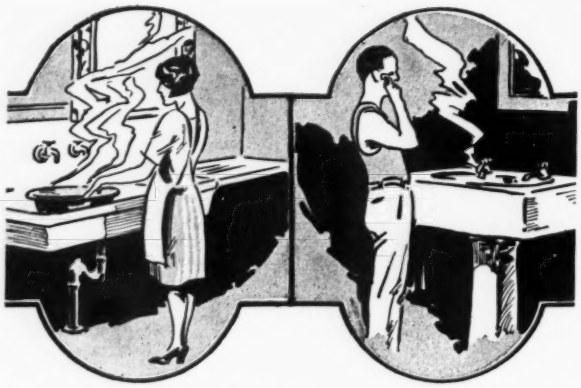
Anchor Post Fence Co. Buys Fluid Heat, Inc.

The Anchor Post Fence Co. of Baltimore, Md., has acquired the assets of Fluid Heat, Incorporated, and will hereafter manufacture this concern's heat burner which is of the rotary, wall flame type, and has been approved by the Underwriters Laboratories.

In preparation for a selling campaign, branch managers of the Anchor Post Fence Co. in the eastern section of the country met recently at the Hotel Commodore in New York City and participated in an all-day conference with the heads of the oil burner division of that company, culminating in a dinner at which W. F. Brannan, president of the company, was the principal speaker. Frank Harbin, sales manager, described the plans now being made for securing dealers for the oil



Officers and branch managers of Anchor Post Fence Co. at their recent dinner in Hotel Commodore, New York City



KING
Tank Heaters

at the very lowest fuel cost are supplying plenty of hot water for thousands of home folks.

KING
Tank Heaters

are made in a wide range of sizes . . . *They help balance the household budget.*

OAKLAND FOUNDRY CO.
BELLEVILLE ILLINOIS

burner division; and T. H. Smoot, chief engineer and designer of the burner, described the operation of the burner in detail. Other speakers were B. B. Tate, chairman of the board; A. Blaeser, vice president; Harvey Weinschenk, comptroller, and H. C. Farrand, who has been in the employ of the Anchor Post Fence Co. for more than thirty-eight years.

Chicago Chosen 1933 City by A. O. B. A.

The tenth annual convention and show of the oil burner industry will be held in Chicago at the Hotel Stevens during the week of June 11, 1933, in conjunction with the opening of the "Century of Progress," according to an announcement by Morgan J. Hammers, president of the American Oil Burner Association. This was decided at Erie, Pa., where the directors of the Association have just held their regular quarterly meeting.

"In view of the fact that the oil burner is a product typical of those which mark America's 'Century of Progress,'" Mr. Hammers said, "it seemed entirely fitting to our directors, after reviewing the wishes of our industry as a whole, that the oil burner industry should celebrate the tenth anniversary of its public shows coincident with the opening of this great international exposition."

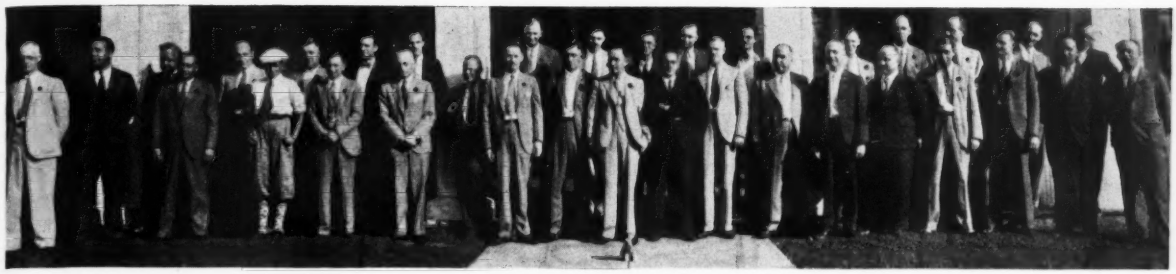
New Jersey Jobber Urges Federal Aid for Wholesalers

Louis Levy, president of the Central Supply Co. of Passaic, N. J., in an effort ot secure aid to stagnated industry, has recently made a suggestion to Charles A. Miller, manager of the Reconstruction Finance Corporation, and to Congressman George N. Seger of New Jersey, which is attracting much attention in the plumbing and heating industry in New Jersey and other states in the east.

Mr. Levy's suggestion or proposal is this that Section 5 of the Reconstruction Finance Act be amended to include "wholesale trade" among the several divisions to be aided by the corporation.

Mr. Levy's proposed amendment follows, the words in italic type being the additions which he suggests to the present Federal act:

"Section V. To aid in financing agriculture, commerce, industry *and wholesale trade,* including facilitating the exportation of agricultural and other products, *the encouragement of building developments of every character and other industry, and all supplies necessary thereto, the aiding of municipalities in the construction of public improvements, the stimulation and encouragement of any municipal sanitation projects, to provide financial aid to power, light and heat corporations, already duly incorporated under the laws of any State or of the United States, to lend financial assistance to wholesalers and industrial organizations such as dealers in supplies, manufacturers, mills, etc., and thus to provide a means for financial aid for the relief of unemployment; and to these ends,* the corporation is authorized to and empowered to make loans, upon such terms and conditions not inconsistent with this act as it may determine, to any Corporation, Bank, Savings Bank, Trust Company, Build-



At the annual sales meeting of the Uniflow Mfg. Co. of Erie, Pa.

ing & Loan Association, Insurance Company, Mortgage Loan Company, Credit Union, Federal Land Bank, Joint Stock Land Bank, Federal Intermediate Bank . . ."

In discussing the subject, Chas. A. Miller of the Reconstruction Finance Corporation said: "There are two things we need today to help change conditions in this country. One of them is to re-establish confidence, and the other is to have the government give to the wholesale industry the same help it is extending to the banks, railroads, building and loan associations and mortgage companies."

Congressman Seger says that he will take the matter up with some of his colleagues on the House Ways & Means Committee.

Adopt Certified Ratings for Unit Heaters

At the recent meeting of the Industrial Unit Heater Association held at the New Bismarck Hotel in Chicago recently, the association adopted and its members have since put into use a certificate in the form of a sticker certifying that their products are rated in accordance with the Standard Code for Testing and Rating Steam Unit Heaters. The Standard Test Code for Testing and Rating Steam Unit Heaters was adopted in 1930 by the joint action of the Industrial Unit Heater Association and the American Society of Heating and Ventilating Engineers. While this code has no statutory authority, it is nevertheless the only code which has recognized authority. Copies of it can be had free of charge on application to the Industrial Unit Heater Association, 308 West Washington Street, Chicago, Illinois, or to the American Society of Heating and Ventilating Engineers, 51 Madison Avenue, New York.

The Industrial Unit Heater Association in adopting and using this certificate of tests and ratings has followed in the footsteps of the National Association of Fan Manufacturers. That Association in conjunction with the American Society of Heating and Ventilating Engineers adopted in 1923 the Standard Test Code for Disc and Propeller Fans, Centrifugal Fans and Blowers. A new and second edition with amendments of this code was brought out by the National Association of Fan Manufacturers in 1932, and copies of that may be had on application to the American Society of Heating and Ventilating Engineers, or to the National Association of Fan Manufacturers, 308 West Washington Street, Chicago. The advantages of standardization in industry are so obvious that they need scarcely be mentioned and these associations are carrying forward this work.

Uniflow Mfg. Co.'s Annual Sales Meeting

The annual sales meeting of the salesmen and distributors of the Uniflow Manufacturing Co., of Erie, Pa., came to a close Tuesday evening, July 26.

All sessions were held at the Kahwa Park Inn where the men were housed and took their meals during the convention.

A banquet was held Tuesday night, at which talks were delivered by C. A. Kuebler, president; M. A. Martin, vice president and general sales manager; J. F. Weir, treasurer; J. S. Bohn, superintendent, and the foremen of the Uniflow Mfg. Co.

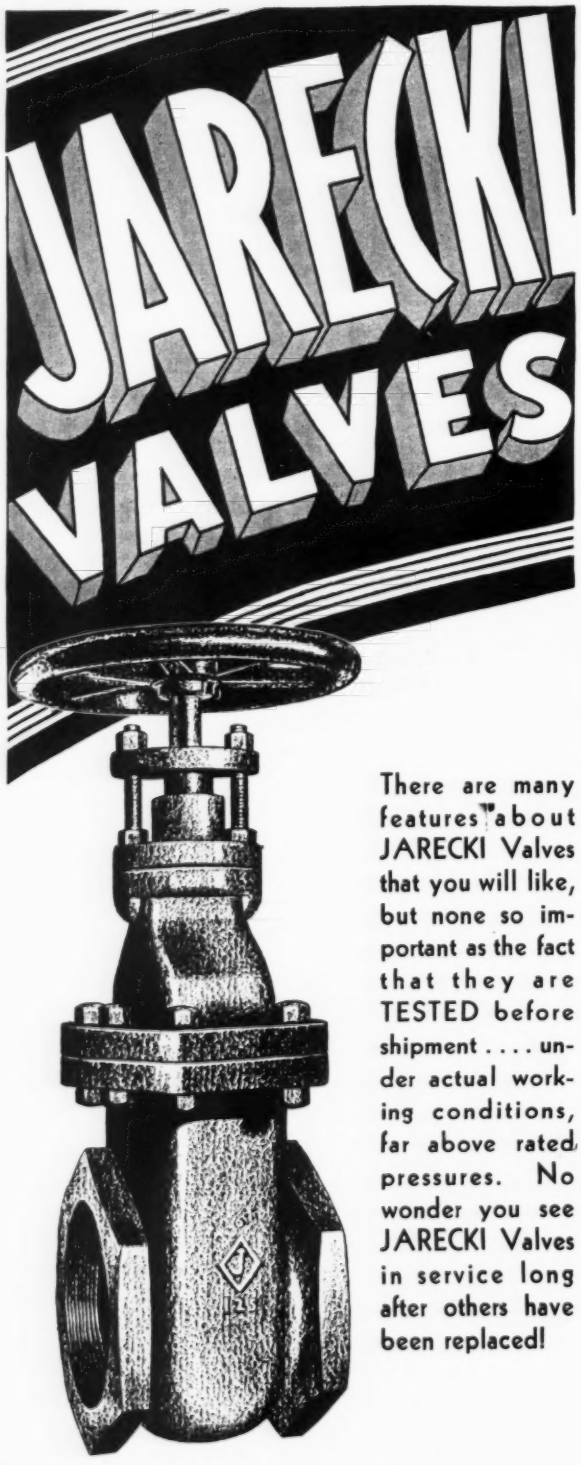
Entertainment during the banquet was furnished by the A. F. L. club, consisting of members of the sales organization of the Uniflow Mfg. Co. The entertainment was under the direction of O. O. Koecher of New York City, Gordon E. Steele of Boston, and H. E. Klein of Philadelphia.

The sessions were the most enthusiastic ever held by the Uniflow company. The delegates all felt that during the past month there has been a revival of interest in water softeners, water systems and electric refrigeration in their territories and with the new pump which was announced at the convention, they are sure that the company will soon be able to report large increases in business.

Some of the highlights of the convention were the talk delivered by O. O. Koecher of New York City, who stated he had sold about 4,000 refrigerators in the New York territory during the past two years, and he emphasized the growing demand for electric refrigeration in that city, and President Kuebler's talk on economic conditions, credits, and the improvement expected in general business conditions, which was borne out by information gathered, from which he quoted some of the best authorities on general business. The fact that the stock market has been going up the last few days and that improvements in general business are indicated on every hand, helped to add zest to the men in attendance at the meeting.

In a talk delivered by M. A. Martin, an extensive sales promotion program was outlined to those in attendance. He described the new equipment now being manufactured by the company and pointed out that the ever growing market for electric refrigeration, water systems and water softeners should necessitate an increase in both sales and factory personnel to considerably more than their present capacities.

At the close of the meeting Tuesday afternoon, a trip was made through the factory.



There are many features about JARECKI Valves that you will like, but none so important as the fact that they are TESTED before shipment . . . . under actual working conditions, far above rated pressures. No wonder you see JARECKI Valves in service long after others have been replaced!

JARECKI
MANUFACTURING COMPANY
Erie, Pa. U. S. A.

With the Trade Golfers

New Jersey Plumbing and Heating Golfers Play at Metuchen

The Plumbing and Heating Trades Golf Association of New Jersey held its July meet at the Metuchen Golf and Country Club, Metuchen, N. J. The day was an ideal golf day and sixteen members turned out as guests of H. A. Rumler, who had arranged a surprise for them by having the club serve a very elaborate shore dinner, including steam clams and lobsters.

Nine holes were played in the morning, with new records, and the kicker's handicap was won by H. Baumgarten.

Eighteen holes were played in the afternoon, with H. Rumler winning his first leg on the cup with a net 58. The following won prizes: Class A first prize went to Stanley Miller with net 73; second prize went to H. Baumgarten, net 74; third prize went to J. Edwards, net 78; fourth prize went to Del Tufo, net 79. Class B first prize went to H. Rumler, net 58; second prize, A. Gasewind, net 65; third prize, A Blackwood, 68; fourth prize, Durkee, net 71.

The scorekeeper's record for the afternoon follows:

	G.	H.	N.		G.	H.	N.
M. Durkee	111	40	71	F. Engelberger	104	20	84
A. Cashman	103	26	77	A. Gasewind	101	36	65
J. M. Buday	119	40	79	S. Miller	86	13	73
B. Yankee (G'st)	104	..	..	J. Miner	112	25	87
H. Lee	115	36	79	H. Baumgarten	94	20	74
J. Edwards	103	25	78	L. Del Tufo	95	16	79
B. Elder	No Card			H. Rumler	94	36	58
S. H. Blackwood	104	36	68	R. Ryan	101	19	82

Wisconsin Plumbing and Heating Club's July Tournament

George Stoehr, A. F. Boettcher, and Walter J. Kohler, Jr., won first, second and third prize, respectively, at the second golf tournament of the Plumbing and Heating Club of Wisconsin, held at Waterford Woods, Thursday, July 14. Jerry Ryan of the Kohler Co., copped the "duffer's cup" himself, relieving Art Bouers of the honor. George Reecke, Jr., had the low net score of 76 for the afternoon.

During the dinner which followed the golf tournament a short memorial service was held for George Roska, who died recently. Louis R. Schmauss, president of the club, gave a short memorial address in this connection.

Play Championship Round at Western Trade Golf Meet

The Western Trade Golf Association of Chicago played its third tournament of the season on July 21 at Kildeer Country Club and showed again the interest in its monthly meetings by attracting fifty-seven members and guests. The day was featured by the third round of the championship matches and the second round of the consolation matches, as well as by the fact that it was past president's day.

Howard W. Evans was the winner of the past president's event, with a 92—19—73. He gets his name on the past president's cup and, in addition, he was first in

Class C in the regular association events. George Turner was low net of the day and won the association cup as well as first prize in Class D. Runner-up in Class D was M. G. Harbula. First in Classes A and B was E. C. Welch. Runner-up was J. L. Comer. Next to Howard Evans in Class C was J. A. Corboy.

C. E. Barrows won the blind bogey event. Clayton Paschen won a special prize awarded for the low gross on the fifth, tenth and fifteenth holes. Rev. James P. Kiely won the guest prize. Ball sweepstake winners were Clayton Paschen, Frank Kiely, W. V. Hoier, Charles Thumm, R. Fries, C. E. Bates and Frank B. Hackett.

Following are the scores of the day:

	G.	H.	N.
Mollison	101	20	81
Rietz	99	26	73
Harbula	98	26	72
Cooper, D. M.	109	26	83
Kiely, F. S. (G'st)	110	..	..
Hoier	110	26	84
Barrows	103	23	80
Thumm, Chas.	98	21	77
Washington	114	30	84
Fries	114	30	84
Gossett	101	25	76
Turner	101	30	71
Milliken	Picked up		
Davis (G'st)	Picked up		
Brown	Picked up		
Hollister (G'st).	Picked up		
Welch	89	14	75
Pincus (G'st)	108	..	..
Johanson	101	20	81
Peterson, C.	103	23	80
Getschow	98	23	75
Kiely, John	82	5	77
Kiely, Jas. (G'st)	83	..	..
Bates (G'st)	91	..	..
Hackett	106	21	85
Evans	92	19	73
Corboy	95	21	74
Comer	90	14	76
Taylor	94	17	77
Lotts	96	13	83
Paschen, Frank	94	14	80
Cramsie (G'st)	88	..	..
Braun	99	17	82
Johnson	108	25	83
Williams	111	30	81
Houghteling (G.)	87	..	..
Stackhouse	99	20	79
Rich	102	18	84
Henderson	100	17	83
Hattis	128	30	98
Price	100	18	82
Dickerson	102	18	84
Walters	112	20	92
Thomas (G'st)	107	..	..
Matchett	98	18	80
Allen	104	24	80
Paschen, Clayton	95	15	80
Loveless (G'st)	109	..	..
Widdicombe	111	30	81
Durr	133	30	103
McFarland	122	28	94
Stanfiel	Picked up		
Lundquist (G'st)	Picked up		
Needler	95	15	80
McBride (G'st)	103	..	..
Graven (G'st)	96	..	..
Callahan	93	18	75

Large Attendance at New England Heating Trade Golfers' Meeting

The New England Heating Trades Golf Association held its regular monthly tournament at Merrimac Valley Country Club, Methuen, Mass., on Tuesday, July 12, with a large attendance. The day's prize winners were: Guest's low gross, M. S. O'Brien, with 69; low gross, J. G. Ross, with 81. Other prize winners were: J. F. Tuttle, H. H. Lynch, J. C. Farrington, M. R. Grover and Fred T. Scott.

The scorekeeper's record follows:

	G.	H.	N.
J. F. Tuttle	92	14	78
H. B. Buse	114	25	89
J. J. Riley	121	37	84
*N. Taylor	100	24	76
*E. E. Cull	124	34	90
J. J. Melliken	104	17	87
*E. A. Morris	102	20	82
*C. Bergstrom	105	23	82
*F. E. Johnson	98	14	84
*L. Powers	96	16	80
*W. T. Brede	86	14	72
*J. F. Murphy	88	18	70
Fred T. Scott	101	18	83
C. Flint	96	10	86
J. F. Dwyer	103	16	87
J. G. Ross	81	15	66
*J. Kelley	108	32	76
*Geo. Anastasia	97	24	73
*W. Simons	93	14	79
L. R. Graves	No Card		
*J. Graves	93	14	79
G. N. Priggin	106	21	85
J. C. Farrington	89	8	81
W. H. Oleson	No Card		
E. F. Tierney	107	31	76
*P. R. Fox	107	24	83
M. R. Grover	108	25	83
*M. S. O'Brien	79	10	69
*H. M. Huggins	No Card		
H. H. Lynch	96	17	79

* Guest.

The Haysco Diverting Valve
(Patented)
This sturdy pivot fixture opens hot and cold lines to Shower or Tub at a flip of the handle.

THIS NEW FIXTURE FEATURES QUALITY

IT'S A BIG VALUE

This combined Bath and Shower Fixture is a Hays First Quality Assembly. Full sized, conservatively designed, all brass, heavy chromium plated fixtures are arranged to eliminate two shower valves and piping. This is one of Hays' greatest values.

Mechanical smoothness of action is obtained by the use of the patented Hays Diverting Valve and the never failing Hays Pop-up Bath Waste. Both units are soundly designed and built to give lasting service.

Substitute Fixture No. 830 shown above for the more expensive four-valve Shower Fixture and the job is yours, Mr. Plumber, without the slightest sacrifice in quality. Your wholesaler will tell you about this and other popular Hays Built-in Fixtures. Insist upon Hays Quality, for it pays.

HAYS MFG. CO., ERIE, PA.

MANUFACTURER TO WHOLESALER TO MASTER PLUMBER

HAYS

COPPER BRASS AND IRON PRODUCTS

MILES of PIPE LIKE THIS

are eating out where DURIRON SHOULD HAVE BEEN USED . . .

Grief for the building owner, but profit for the plumbing contractor. False economy has now been proved. Pipe like this was not meant to carry acid at all. It must now be replaced. Duriron is the safe pipe to use.

Plumbing contractors will find dozens of cases just like this right in their own town:

Photo-engraving plants
School laboratories
Hospitals and Physicians' buildings
Industrial plants
Everywhere acids are used

There is four times the profit in a Duriron job . . . and a lot more permanent satisfaction to your customer. Duriron price lists sent upon request. We'll help with suggestions, too.

THE DURIRON CO., Inc.
410 N. Findlay St. Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

Eastern Trade Golfers' July Meet

The Eastern Trade Golf Association held its regular monthly tournament on Tuesday, July 19, at the Montclair Golf Club, Montclair, N. J., with a good attendance, and it proved a most enjoyable event.

The scorekeeper's record follows herewith:

Prize Winners

	G.	H.	N.		G.	H.	N.
T. W. Powers....	89	24	65	S. C. Carrier.....	81	9	72
S. J. Geohegan...	79	10	69	W. W. Hubbard..	88	16	72
Chas. S. Wood...	93	24	69	Arthur Glore	88	16	72
H. Townsend ...	85	15	70	F. A. Murray....	86	13	73
J. C. McDonald..	90	20	70	H. P. Bartlett...	94	21	73

Other Scores

	G.	H.	N.		G.	H.	N.
W. Fleisher	97	24	73	John Kjerner ...	81	4	77
H. D. Jackes.....	94	20	74	G. M. Scott.....	97	20	77
J. B. Garfield....	82	8	74	W. H. Carrier....104		25	79
A. F. Hinrichsen.	92	18	74	C. D. Presdee....111		32	79
H. W. Reis.....	99	24	75	A. P. Keasby....	98	16	82
Geo. Allen, Jr....	99	23	76	B. T. Cummings.103		17	86
Walter Davis ...	89	13	76	R. G. Bookhout..113		27	86
L. B. Harrison...106		29	77	D. M. Forgan....103		16	87
Henry Sleik	94	17	77	Herman Lange ..135		45	90

New England Metal Products Golfers' July Meet

The regular monthly outing of the New England Metal Products Golf Association was held at the Crow Point Golf Club, Hingham, Mass., on Thursday, July 24.

The host of the day was James W. Rollins, assisted by William H. Thayer, Harry Doten, Wally Smith and Robert E. Sargent.

The weather was perfect, and in the morning about 30 played 18 holes of golf on this seaside course. After luncheon, about 40 played 18 holes, competing for four prizes in a blind kickers handicap tournament. Two of the prizes were won by guests, and the other two were won by William H. Taylor and Frank W. Hubbard.

A most excellent clam and lobster bake was served at 6:30 by James W. Rollins and his able assistants.

A vote of thanks was given to Mr. Rollins for the great trouble he and his associates had taken to make the day a wonderful success.

Chicago Plumbing Contractors July Golf Tournament

The Plumbing Contractors' Association of Chicago held its third regular monthly tournament on Thursday, July 21, on the links of the Euclid Hills Golf Club with a good attendance in spite of the hot weather.

The prize winners and the players' scores follow:

Members' Prizes
Class A—From 0-22
1st prize, low net—Cigarette lighter set—Chas. W. Jones.
2nd prize, low net—Rain jacket—John Corboy.
3rd prize, low net—Pair of golf hose—Ed. Mortimer.

Members' Prizes
Class B—From 23-40
1st prize, low net—Suede jacket—R. J. Weber.
2nd prize, low net—Rain jacket—E. C. Wagner.
3rd prize, low net—Three golf balls—Chas. W. Alcock.
4th prize, low net—Pair of golf hose—James W. Fettes.

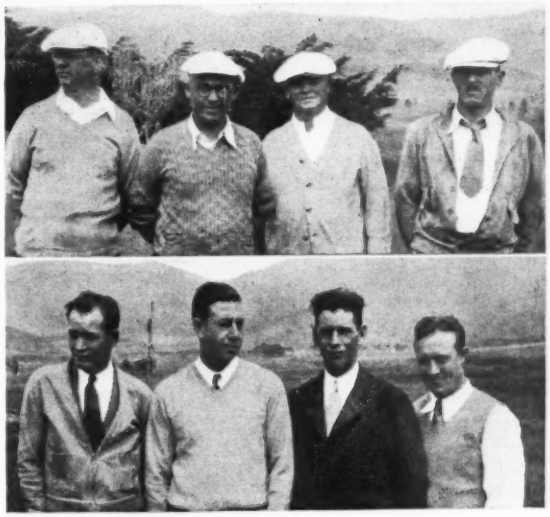
Associate Members' Prizes
Class A—From 0-23
1st prize, low net—Military set—Wm. Spillane.
2nd prize, low net—Rain jacket—Jos. L. Comer.
3rd prize, low net—Pair of golf hose—Jos. Carroll.

Associate Members' Prizes
Class B—From 23-40
1st prize, low net—Vacuum bottle—Frank Fabbri.
2nd prize, low net—Sweater—C. N. Fortmueller.
3rd prize, low net—Pair of golf hose—Wm. R. Brookman.

	G.	H.	N.		G.	H.	N
C. W. Alcock	104	27	77	F. B. Hackett	106	18	88
John Blair	110	28	82	Chas. D. Harris	119	34	85
C. A. Bolton	111	22	89	A. H. Jolliffe	101	17	84
W. R. Brookman	114	31	82	Chas. W. Jones	88	15	73
Jos. W. Cannon	109	22	87	Geo. Matthews	123	39	84
Jos. Carroll	94	13	81	K. McKenzie	106	21	85
Jos. L. Comer	86	18	78	Ed. Mortimer	97	19	76
John A. Corboy	91	15	76	Peter M. Munn	104	22	82
Chas. A. Dreier	105	25	81	Henry P. Reger	111	24	87
Wm. S. Eadie	113	32	81	Clyde Savage	109	19	90
Frank Fabbri	99	24	75	Wm. J. Spillane	87	15	72
G. J. Feldkamp	114	29	85	Henry Swade	111	28	83
Jas. W. Fettes	105	27	78	E. C. Wagner	104	28	76
R. C. Flinder	103	17	86	Fred Wagner	119	28	91
C. N. Fortmueller	109	33	76	Chas. Watson	119	27	92
W. K. Glen	91	8	83	R. J. Weber	103	27	76

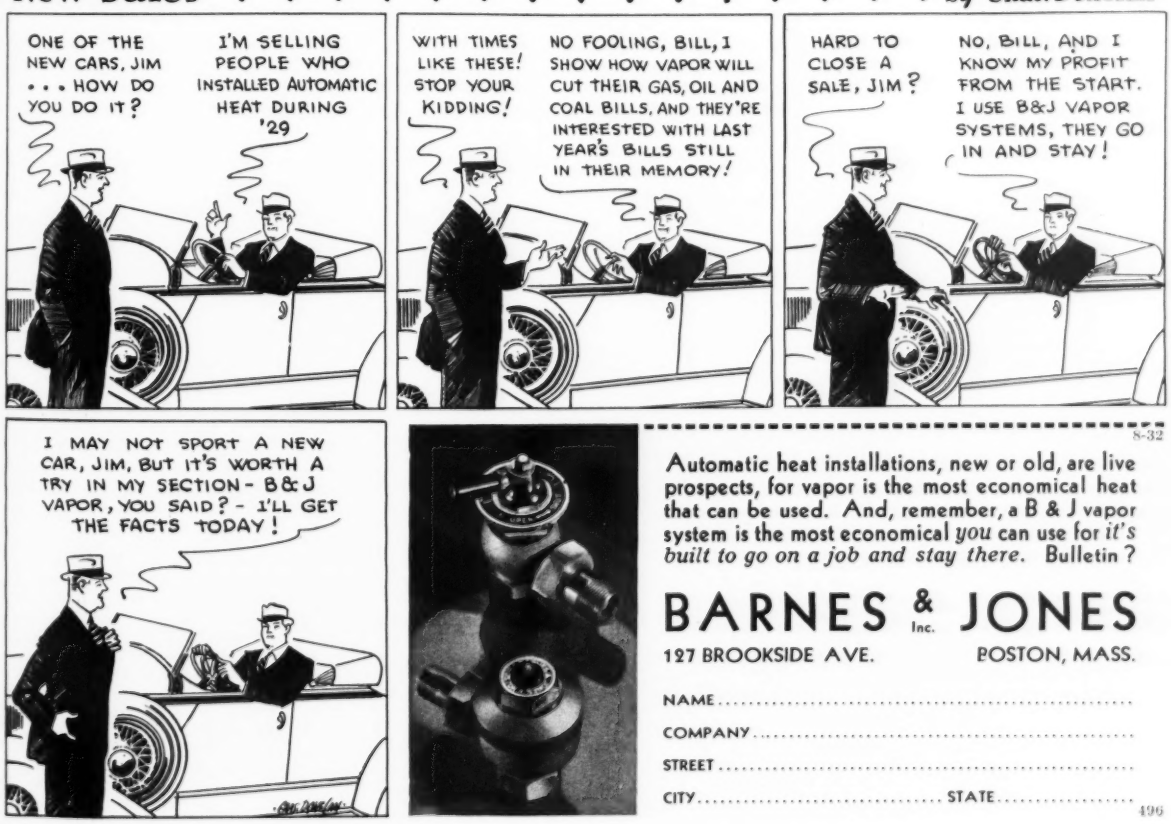
San Francisco Trade Golfers Play New Course

Both A and B class winners in the July tournament of the Plumbing and Heating Club of San Francisco and the Bay Cities, came through with a net 75. They were, respectively, Donald O'Hair of P. E. O'Hair & Company, and Charles Higgins, senior member of the firm of Higgins & Kraus. The tournament was played off July 7 at Sharp Park, San Francisco, third and newest municipal course, first thrown open for play on April 15. It is located sixteen miles south of the city, between the hills and the ocean, within sight and sound of the surf, and is delightfully cool; but the club members found plenty of hazards. It is a 71-par course and a sporty one. The P. and H. Club has decided to continue their tournaments right through the summer months instead of suspending for the customary vacation period. The new golf committee is headed by W. H. Rainwater, the other members being Stuart Greenberg and Frank B. Mosher. These men have some novel plans afoot for



At the top, left to right: Charles Higgins, Ed. J. Kraus, W. L. Weitz and L. P. Larsen.—At the bottom, left to right: W. H. Rainwater, Stuart Greenberg, Ralph P. Olsen and R. J. Fuite.—From photos taken at the July tournament of the Plumbing and Heating Club of San Francisco and the Bay cities

New Sales . . . . . by Chas. Donelan


ONE OF THE NEW CARS, JIM . . . HOW DO YOU DO IT?
I'M SELLING PEOPLE WHO INSTALLED AUTOMATIC HEAT DURING '29
WITH TIMES LIKE THESE! STOP YOUR KIDDING!
NO FOOLING, BILL, I SHOW HOW VAPOR WILL CUT THEIR GAS, OIL AND COAL BILLS, AND THEY'RE INTERESTED WITH LAST YEAR'S BILLS STILL IN THEIR MEMORY!
HARD TO CLOSE A SALE, JIM?
NO, BILL, AND I KNOW MY PROFIT FROM THE START. I USE B&J VAPOR SYSTEMS, THEY GO IN AND STAY!
I MAY NOT SPORT A NEW CAR, JIM, BUT IT'S WORTH A TRY IN MY SECTION - B&J VAPOR, YOU SAID? - I'LL GET THE FACTS TODAY!

8-32

Automatic heat installations, new or old, are live prospects, for vapor is the most economical heat that can be used. And, remember, a B & J vapor system is the most economical *you* can use for *it's built to go on a job and stay there.* Bulletin ?

BARNES & JONES Inc.

127 BROOKSIDE AVE. BOSTON, MASS.

NAME .....

COMPANY .....

STREET .....

CITY ..... STATE .....

496

CADWELL

NO. 10 AIR VALVES

THE quick action of CADWELL No. 10 Air Valves in preventing the escape of steam and allowing the exhaustion of air from the radiator and the dependability of this action, are the major reasons for their popularity with the most discriminating of heating contractors. If you are finding some heating system particularly difficult, due to the non-heating of radiators, try CADWELL No. 10 Air Valves.

Get them from your jobber.

The
BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.

DAHLQUIST
COPPER BOILERS
and
HOT WATER HEATERS

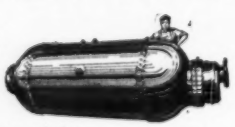
REPRESENTATIVES
The Dahlquist Mfg. Co. has several territories open and will be glad to hear from men who have had experience selling the Building and Plumbing Fields or who are now covering these fields and would like to take on another line.
In writing, give full particulars about your experience and territory wanted.

You have three reasons for selecting Dahlquist Copper Boilers: (1) Dahlquist is an acknowledged leader in the Copper Boiler field; (2) Dahlquist Copper Boilers have exclusive patented features that are of revolutionary importance; (3) Dahlquist manufactures the finest product at the lowest current prices.

If you are in the market for a Copper Boiler of any description, Dahlquist will make it and meet your specifications in every respect. On all standard range boilers and hot water storage units you will make a quicker sale and reap a larger profit when you recommend a Dahlquist.

Dahlquist Super-Aquatherm and Dahlquist Turbo will be demanded by every householder in the near future. Write now for latest prices and full information about these new Dahlquist features.

Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers, or heavy pressure boilers.



Write for prices and data

DAHLQUIST MFG. COMPANY
60 West 3rd Street So. Boston, Mass.

the immediate future that should maintain attendance at summer tournaments well above the average.

Among the scores turned in were:

	G.	H.	N.		G.	H.	N.
McLeod	97	17	80	Gabbert	95	18	77
Mixter	92	12	80	Mosher	108	22	86
Fuite	104	23	81	Olsen	112	35	77
Rainwater	103	19	84	Elliott	86	9	77
O'Hair	90	15	75	Blair	96	17	79
Clark	96	15	81	Greenberg	109	27	82
Higgins	97	22	75	Kraus	108	24	84

Metropolitan Trade Golfers June Meet

The Metropolitan Trade Golf Association held its monthly tournament, at the Oakland Golf Club in Bayside, Long Island. Seventeen members were present. The next meet will be held at the Arcola Country Club, New Jersey. The following were the prize winners and their scores:

Class A

	G.	H.	N.
First prize—K. S. Roberts	83	4	79
Second prize—F. Korndoerfer	89	5	84
Third prize—L. Rothawell	93	8	85

Class B

	G.	H.	N.
First prize—A. W. Hale	98	23	75
Second prize—J. H. Davis	103	22	81
Third prize—T. Larkin	101	20	81

Delaware Valley Trade Golfers' July Meet

The Delaware Valley Trade Golf Association held its regular monthly meeting at the Trenton Country Club on Tuesday, July 12, with a good attendance. The members of the association were the guests of Harold Maddock, A. M. Maddock, Philip H. Faherty and Paul Berryman. The day was perfect for golf, and every one present had an enjoyable time.

The prizes for the morning play were won by Russell Knight, H. J. Kleinman and W. G. Brewton. The afternoon prizes went to Raymond Groff, Paul Berryman, C. L. Weber, Charles Snodgrass, James Frazer, John Bitzer and A. V. Gemmill.

The scorekeepers record of the day's events follows:

Morning Play—Nine Holes Medal Handicap

	G.	H.	N.		G.	H.	N.
C. L. Weber	49	11	39	H. J. Kleinman	47	11	36
H. S. Threasher	43	guest	..	James Fraser	44	11	33
L. E. Adams	41	with-drew	..	A. V. Gemmill	41	6	35
Russell Knight	48	16	32	Art Kuschan	..	guest	..
Ray Stresser	56	guest	..	Bob Savill	46	11	35
E. J. Hudson	53	guest	..	John Doody	61	18	43
R. G. Bookhout	61	guest	..	Chas. Hackett	51	14	37
W. H. Kelly	58	guest	..	Chas. Haynes	43	guest	..
Raymond Groff	47	15	32	Wm. G. Brewton	50	14	36
W. C. Hanson	47	9	38	John Radice	57	13	44
R. F. Kleinman	54	10	44	John Bitzer	51	8	43

Afternoon Play

Chas. Hackett	107	29	78	John Radice	102	25	77
Chas. Haynes	100	guest	..	J. A. Dwyer	106	30	76
John Doody	134	35	99	L. R. Larson	134	guest	..
Bob Savill	104	22	82	A. N. Kuschan	91	guest	..
W. C. Hanson	103	18	85	A. V. Gemmill	84	11	73
R. F. Kleinman	95	21	74	James Fraser	92	22	70
Raymond Groff	91	28	63	B. Campbell	81	guest	..
H. J. Kleinman	93	22	71	A. Seither	90	guest	..
Arch Maddock	105	22	83	Russell Knight	106	32	74
W. G. Tyler	103	22	81	W. G. Brewton	99	27	72
C. L. Weber	89	22	67	John Bitzer	107	35	72
H. S. Thrasher	91	guest	..	H. S. Maddock	94	18	76
E. G. Carpenter	102	guest	..	Ray Stresser	..	guest	..
R. Cummings	96	guest	..	E. J. Hudson	106	guest	..
Chas. Snodgrass	90	20	70	W. H. Kelly	103	guest	..
Paul Berryman	98	31	67				

Michigan Trade Golfers Play in July

The monthly tournament of the Michigan Trade Golf Association was held on Thursday, July 21, at Birmingham Golf and Country Club, Birmingham, Mich., with an attendance of 38 members and guests. Among the guests who enjoyed the outing were H. S. Ellington, James Cullen and R. A. Billett.

After dinner a lively discussion was held regarding rules governing the system of awarding prizes. Prizes were awarded and after a rising vote of appreciation to E. D. Sheeley, the host of the day, the meeting was adjourned. The August meeting will be held at Red Run Golf Club on Thursday, August 25.

The prize-winners were as follows:

	Gross	Handicap	Net	
E. D. Sheeley	90	18	72	1st prize
Larry Walsh	104	31	73	2nd prize
Tom Brown	85	12	73	
H. E. Paetz	88	15	73	
J. F. G. Miller	91	17	74	3rd prize
R. L. Deppman	98	24	74	
Fred Cooper	105	30	75	4th prize
J. B. Whitford	99	14	85	Kicker prize
A. Fikentscher	110	..	..	Kicker prize
Karl Zint	101	19	82	Kicker prize
J. Patchford	98	16	82	Kicker prize
C. J. Taylor	94	..	..	Kicker prize
Jim Cullen	100	..	..	Kicker prize
J. Ewald	126	..	..	High Gross

The other players and their scores follow:

	G.	H.	N.		G.	H.	N.
J. B. Stewart	N.C.			H. J. Eitel	112	27	85
J. Vanassche	113	..	..	J. E. McFate	111	26	85
E. L. Kline	110	18	92	M. B. Allan	98	22	76
R. W. Light	113	..	..	E. Sanger	109	30	79
H .R. Roland	110	27	83	Geo. E. Clifford	90	..	..
G. W. Greig	80	..	..	A. E. Fisher	99	..	..
I. R. Kanack	106	25	81	A. Toles	113	..	..
C. H. Soderberg	94	..	..	W. G. Boales	115	32	83
H. J. Taylor	90	12	78	F. X. Marzolf	113	26	87
H. C. Nannen	117	26	91	Edw. Glanz	107	24	83
A. Finkentscher	110	..	..	H. S. Ellington	113	..	..
E. J. Anderson	82	5	77	R. Billette	109	..	..
L. L. McConachie	110	27	83				

Southwestern Golfers Hold July Tournament

The Southwestern Trade Golf Association of Kansas City, Mo., held its regular monthly tournament at Victory Hills Golf and Country Club on Friday, July 15. The members were the guests of Arthur Hall.

The prize winners in class A were: Harry Antrim, first prize; Charles Harris, second prize, and Mr. Piepenbring, third prize. Class B winners were: John Karges, first prize; Mr. Proctor, second prize, and Mr. Ousterhout, third prize. The blind bogey prize went to Mr. Antrim, and Mr. Piepenbring had the smallest number of putts. Prizes for most birdies went to Carl Smith, Harry Antrim, I. L. Roark, Charles Harris, Mr. Liggett and Mr. Scoles.

The next tournament will be held at South Ridge Golf and Country Club on Wednesday, August 17.

Now in New Location

J. A. Brudermann, manufacturers' agent in New York City, has just moved from 15 Moore street to 80 Broad street. He is sales representative for the Northern Indiana Brass Co., Elkhart, Ind., American Brass Novelty Co., Grand Haven, Mich., and Roberts Tube Works, Detroit, Mich.

BUSINESS PERSONALS

JERE L. MURPHY, one of the leading plumbing and heating contractors in New York City, sailed for Europe on Wednesday, July 27, on the Bremen. He is accompanied by his wife and son, Charles. Mr. Murphy intends to visit Ireland for the first time since he left there at the age of 12. The party will also travel in Scotland and visit London and Paris. They will be gone six weeks.

WARREN WEBSTER, JR., of Warren Webster & Co., Camden, N. J., suffered internal injuries and severe cuts and bruises about his face and head Saturday afternoon, July 30, when his airplane was caught in an air pocket at Beach Haven, N. J., and smashed against a telephone pole. He was given emergency treatment and taken by ambulance to Camden, N. J., where he is now reported to be on the road to recovery. The airship was of the autogiro type and Mr. Webster has been using it daily in commuting between his office in Camden and his summer home at Beach Haven.

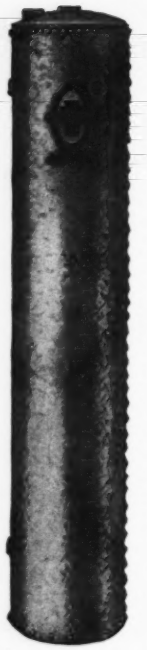
J. P. MATTHEWS has been elected vice president in charge of production for Thermoil Heaters, Inc., at Benton Harbor, Mich.

JOSEPH A. MAYNARD, president of the Boston Brass Co., Boston, Mass., has just been elected chairman of the Democratic state committee of Massachusetts. He has been prominent in Democratic political circles of Massachusetts for a number of years and was formerly surveyor of the port of Boston and formerly chairman of the Democratic city committee of Boston. Mr. Maynard was also president of the Eastern Supply Association a few years ago.

HOMER H. HARDY, formerly assistant foreign manager for Frigidaire Corporation, has just been appointed manager of the newly established export department of the Trupar Manufacturing Co. of Dayton, Ohio, according to announcement just issued by Harry J. Hunt, president of the company. Mr. Hardy has been associated with the export business for the last fourteen years and has had a wide experience in sales activities in foreign countries. In the course of his duties, he has circled the globe three times and established business relations with firms in Hawaii, Japan, China, Burma, Dutch East Indies, New Zealand and Australia.

Homer H. Hardy

NORMAN W. FOY has been appointed Chicago District sales manager of Republic Steel Corporation of Youngstown, Ohio, according to announcement by N. J. Clarke, vice president in charge of sales. Mr. Foy became associated with the old Republic Iron & Steel Co. as a salesman in 1919. He was subsequently manager of the



It's been a Great Year

for "pencil sharpeners"—and poor houses. It has been a better year for those contractors who have pushed high quality merchandise even in the face of heavy price pressure. Never have Pennsylvania Range Boilers proved their value as business getters, good-will builders and profit makers as they have this past year. Use them on your next installation.

Sold by Jobbers

Complete line of *All Welded* and *Riveted and Welded* Galvanized Boilers, Tanks and Heaters.

JOBBERS: Write us for sample of any boiler for 30-day inspection.

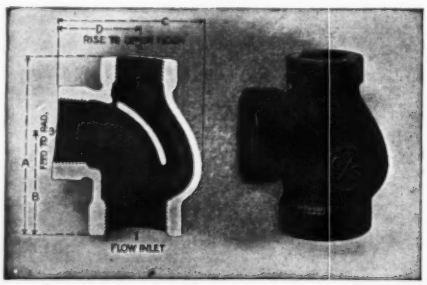
PENNSYLVANIA RANGE BOILER CO.

Established 1895

24th and Washington Ave. Philadelphia, Pa.

A SAVING for YOU

and Satisfaction for your customer



with

BLAKE O/S DISTRIBUTOR FITTINGS

These successful fittings save labor, extra fittings and joints. They eliminate entirely the use of ordinary elbows, tees and nipples, and make it easy to keep risers in line.

Features of the Blake O/S are perfect circulation and uniform distribution of hot water to all radiators. Made in cast iron, galvanized or brass. Save money on distributor fittings—give complete satisfaction to your customers.

Sold by jobbers everywhere

"Make No Mistake—Use The Tested Blake"

BLAKE SPECIALTY COMPANY
ROCK ISLAND « ILLINOIS

company's Buffalo, Boston and Birmingham offices, being made assistant western manager of sales shortly after the formation of the present Republic Corporation. Mr. Foy will continue to make his headquarters at Republic Steel Corporation's district sales offices in the McCormick building, Chicago.

STANLEY G. FLAGG, of Stanley G. Flagg & Co. of Philadelphia, sailed from New York, July 19, for Europe, where he intends to spend several weeks.

HAROLD A. CROSS, Chicago representative of J. B. Wise, Inc., Watertown, N. Y., who for some weeks has been seriously ill in the Edward Hines Hospital in Chicago, is showing consistent improvement, according to latest report from the hospital.

PAUL J. BRACKEN has been appointed Ohio district manager of the National Radiator Corporation of Johnstown, Pa., according to announcement by Charles L. Crouse, vice president and general manager of sales. Mr. Bracken has been active in the boiler and radiator field for a number of years. He will make his headquarters in Cincinnati.

J. L. STULSAFT, 501 Fifth avenue, New York City, has just been appointed representative in New York state, New Jersey and the New England territory for the Thos. J. Nichol Co. of Cincinnati, Ohio.

DR. WEBSTER N. JONES has resigned as general superintendent of the processing division of the B. F. Goodrich Co. of Akron, Ohio, to become director of engineering at Carnegie Institute of Technology in Pittsburgh.

H. C. RAMSAY, vice president in charge of international business of the Worthington Pump & Machinery Corporation of New York City, sailed for Europe in July. He will spend ten weeks in England, France, Germany, Spain and other countries.

STUART G. PHILLIPS, advertising manager of the Dole Valve Co. of Chicaog, has been elected secretary-treasurer of the National Industrial Advertisers Association.

HOWARD E. CRUM, JR., manufacturers' agent at 2615 Blaine place, Chicago, has just been appointed representative in the Chicago territory for the Germain Mfg. Co. of Saginaw, Mich.

A. A. WEDDERSPOON, in charge of foreign sales of the Petroleum Heat & Power Co. of Stamford, Conn., has just returned from a 10 months' trip in Europe, on which he visited most of the company's dealers in that part of the world and secured many new dealers. He reports that Europe will be a real market for oil burning equipment when business conditions become settled.

E. J. TUBBS has just been appointed eastern representative for the Anchor Post Fence Co. of Baltimore, Md., manufacturers of oil burners. He will make his headquarters at the company's New York office at 9 East Thirty-eighth street.

MAYER GODCHAUX has just been appointed sales representative in New Orleans and surrounding territory for the Bishop & Babcock Sales Co. of Cleveland, Ohio. Mr. Godchaux will make his headquarters at 2234 State street, New Orleans, La., and will handle this company's fans, blowers, air washers, vacuum and vapor steam heating specialties and temperature regulation equipment.

TRADE

NEWS OF PLUMBING AND HEATING CONTRACTORS

Outing Will Honor National President Edward B. Kleine

R. J. Cluxton, chairman of the entertainment committee of the Cincinnati Master Plumbers' Association, has just issued invitations to members and friends to attend a stag outing on Saturday afternoon, August 20, in honor of Edward B. Kleine, the newly elected president of the National Association of Master Plumbers. The outing will be held at the home of Past National President John J. Vogelpohl, at Hamilton and Mill Road, Mt. Healthy, Ohio. The entertainment committee has provided many interesting features, including refreshments with lunch in the afternoon, and a dinner at the Homestead Golf Club in the evening. Tickets to the affair are $3 per person.

The Cincinnati Association feels that the best way to show its appreciation and joy at the high honor attained by one of its members will be to gather together in an afternoon of entertainment and good fellowship and its members are of the opinion that every master plumber in Ohio should be present on this occasion and let President Kleine know that he has the support of all master plumbers in Ohio during his administration.

Send Report to Exhibitors at Plumbing Exposition

The convention and exhibit committee, M. J. Kennedy, chairman, which directed the recent exposition at New York during the convention of the National Association of Master Plumbers, has just distributed to exhibitors a special attendance report.

While attendance records show that between 60,000 and 65,000 people attended the exposition during the four days it was open, this report is made up only of registrations by those interested in the plumbing business. From the general attendance, about 70 per cent filled in invitations giving their names and addresses. These invitations have been passed along to the local committees and association members are now following up these leads for new business.

The special attendance report just mailed will enable exhibitors to keep in touch with those members of the trade who visited the booths.

President Hoover's Housing Conference Report Praises Modern Plumbing and Heating

The final reports of President Hoover's Conference of Home Building and Home Ownership have just been published in book form and contain many recommendations of building authorities on how the standard of American housing can be raised in accordance with the program which was formulated by the President's Conference at its meeting in Washington last December.

The reports advocate the necessity of lower building costs, and the authors find that the failure of architects to work with builders is to some extent to blame for the high cost of home building. The necessity of protecting the home-buying public from the "jerry-builder" is also emphasized, and it is urged that central inspection bureaus be established to certify homes that meet certain standards.

It is gratifying to notice that the development of plumbing, heating, lighting and refrigerating equipment is reflected in the inclusiveness of the data on fundamental equipment in this book. The authors have endeavored to make this vast body of facts available to

Some of the delegates and guests at the recent annual convention of the California State Association of Master Plumbers, at Oakland, Calif.

the builders of low-cost houses and to the home owner of small means, who have hitherto benefited but little from it. In consequence the report enables the home owner in any part of the country to determine the standards of fundamental equipment he should insist upon for his home, advises him on how to secure equipment meeting those standards, what it should cost him, and how to maintain it once installed. It compares for him the costs of different types of heating and air conditioning systems, plumbing facilities, wiring practices, and refrigerating devices, expounds the principles involved, discusses the merits of different types of fuel, and in general constitutes an invaluable source book for the builder or owner of a house.

Philadelphia Master Plumbers' July Meeting

Philadelphia Master Plumbers' Association held its regular monthly meeting in July, with a good attendance in spite of the hot weather. President Maney J. Feeney was present, but being still under his doctor's care and urged to follow his instructions, he found it necessary to ask Vice President George Hicks to preside at the meeting.

Walter Raid acted for Secretary Robert H. Pflug-Felder, who was absent on account of illness. Mr. Raid also rendered a report on the membership campaign. His report showed that 40 new members had joined the association and that 20 more have promised that they will join in the near future. The membership drive was considered successful from every viewpoint, especially under the present unfavorable conditions.

George Hicks also reported on the Golden Anniversary Convention of the National Association of Master Plumbers held last month in New York City. In the course of his remarks he said that in the neighborhood of 150 members of the Philadelphia association were in attendance. President Feeney told of his part in the formal presentation to George F. Uber of a token of the association's esteem—an exquisite watch fob.

Following these reports, H. J. Stilwell, chairman of the educational committee, introduced Howard Hollobaugh of the Bastian-Morley Co. of Laporte, Ind., who spoke on the "Evolution of Seamless Drawn Copper Tanks." He explained their construction and demonstrated their operation.

It was announced that plans are being made by Edward Quaid, chairman of the Gas Company cooperative committee, for a large meeting in September to which invitations to attend are extended to all members of the association as well as to all master plumbers in Philadelphia who are not members of the organization.

Colorado Executive Committee Announced

The executive committee of the Colorado Society of Sanitary and Heating Engineers for the ensuing year has just been announced as follows: Ben Bernzen, Boulder; J. M. Boies, Fort Morgan; J. P. Brickey, Denver; E. L. Moore, Longmont; L. R. O'Rear, Denver; R. M. Small, Denver; John H. Woehler, Greeley, and J. J. Wafer and E. B. Clayton, both of Denver.

Canton Apprenticeship Class Closes Season

The Apprenticeship Class of Canton, Ohio, recently held its final meeting of the season in the form of an inspection trip.

John Knoll, the instructor, made arrangements with the apprenticeship committee of the Canton Master Plumbers Association, of which Harry Zimmer is chairman, to take all of the city's apprentices and as many of the master plumbers as possible over to Salem, Ohio, to visit several plants, in conjunction with apprentices and master plumbers from Alliance, Salem, Columbiana and Lisbon, Ohio. The apprentices were entertained by the master plumbers, who provided transportation and dinner for all.

Canton, Ohio, apprentices and master plumbers from Canton, Alliance, Salem, Columbiana and Lisbon at the Salem Sewage Disposal plant

The inspection trip was a success and thoroughly enjoyed by the entire party. The main feature of the trip was the Salem Sewage Disposal Plant, which is the first of its type in the state of Ohio, and operates quite differently from other types.

The party also visited a pump and enameling plant.

The party consisted of thirty-two members. The trip brought to a close the apprenticeship class for the year 1931-32 in a pleasant manner, bringing the apprentice and the master plumber together in a social way that creates good will and a desire to carry on in the coming year, and that is the spirit of vocational education.

Wisconsin Plumbing Supervisors Hold Annual Meeting

William Melzer, Madison, Wis., was elected president of the Wisconsin Society of Plumbing Supervisors, at the closing session of the recent annual convention of that organization at Neenah, Wis. Other officers chosen include: William Bartlett, Pewaukee, first vice president; George Gauslin, Appleton, second vice president; Michael Murray, Fond du Lac, third vice president, and R. E. Hasselkus, secretary-treasurer.

Madison was selected for the 1933 convention city, and sessions will be held in conjunction with a course of study to be given by the University of Wisconsin—and designed especially for plumbers.

Discussion at the convention this year centered around the new amendments to the state plumbing code. Activity of the society is concerned with research, education, standardization, plumbing, comfort stations, farm and rural water supplies, source and system, farm and rural sewage disposal, and both rural and urban sanitation.

Annual Stag Dinner of the Buffalo Plumbing, Heating and Supply Trades

Under ideal skies and with everybody in good humor, the annual stag dinner of the plumbing, heating and supply trades of Buffalo, N. Y., proved a great success, July 19. The outing was held at the Lake Shore Trap and Field Club and was attended by more than 100 men. The committee having charge consisted of Albert Kranichfeld, chairman, A. A. Westphal, Walter Kamprath, William Ludlow, Allan Smeader and George Sander, of the Master Plumbers Association of Buffalo, under whose auspices the affair was given.

There was a buffet lunch at noon and a banquet in the evening at which W. F. Lucas acted as toastmaster. The principal speech was made by George W. Frank, former secretary to George Drake, ex-president of the National Master Plumbers Association. Mr. Drake also spoke. There was plenty of singing at the banquet and all cares for the day were thrown aside.

In the athletic events, the West Side, led by William MacGamwell, defeated the East Side, captained by George Salzman by a score of 12 to 7.

The 100-yard dash for master plumbers' sons was won by the son of E. J. Haller and C. J. Rasp's son second. The same event for master plumbers and heating contractors resulted in Jerome Telaak coming under the wire first and his brother Jos. Telaak second. L. Howe came first in the same event for the supply trades and J. W. Stoner second.

A. A. Westphal was first in rolling the ball contest and Fred Fleishauer, secretary of the association, second. J. T. Telaak won the shot put with Allan Westphal second for the plumbers, while S. H. Patterson came first and C. A. Johnson second in the same contest for the supply trades. The trap shoot was won by Walter Johnson. The others in order of their scores were as follows: second, A. Alf; third, L. Howe; fourth, J. T. Telaak; fifth, T. Crozier; sixth, Charles Waldo, and seventh, C. J. Rasp. Prizes were awarded the winners.

The donors of the different prizes were: Cleveland Heater Co., David Bell Co., Inc., Sloan Valve Co., Crane Company, American Brass Company, Bison Plumbing Supply Co., Frontier Water Steam Supply Co., National Radiator Corp., Qua Wally of Wolverine, National Lead Co., Salzman Sanitary Supply Co., H. A. Thrush & Co., Dixon & Ballou, and Ruud Manufacturing Co.

Some representatives of the Rochester Master Plumbers' Association were expected to attend but as they themselves were getting ready for an outing the next day, they found they could not attend. Secretary Fleishauer and about six master plumbers from Buffalo journeyed to Rochester the next day and took part in the celebration in that city.

Wisconsin Well Drillers Study Proposed Law

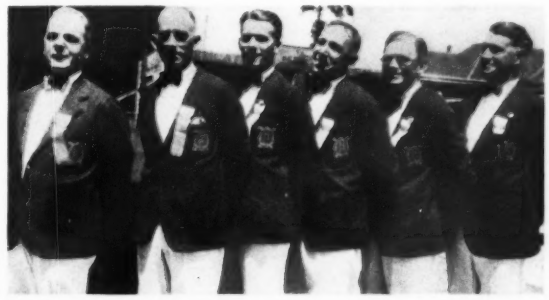
Frank R. King, plumbing and domestic sanitary engineer, state board of health, lead a discussion of the proposed Wisconsin drillers' license law, at the annual convention of the Wisconsin and American Well Drillers' Association held recently in Milwaukee.

The law would place well drilling under supervision of the state board of health and require an analysis of the water and inspection of wells regularly.

Plan to Reopen San Francisco Plumbers' School

At the last meeting of the Apprenticeship Committee of the Master Plumbers Association of San Francisco, Inc., the following resolution was adoptetd:

"That the Master Plumbers' Joint Apprenticeship Committee concur in the suggestion of the Industrial Association that the Plumbers' Trade School be closed for the summer vacation months, and that a plan be worked out, if possible, for the reopening of the school on some modified arrangement, the Master Plumbers to appoint a special committee to confer with the Industrial Association for this purpose."



Left to right: N. J. Previati, Ed. J. Hoerst, Hubert Salisbury, Fred M. Cooke, Arthur Johnson and Hudson Salisbury—a sextette of Alameda County master plumbers who helped to entertain the delegates to the recent annual convention of the California State Association of Master Plumbers, held at Oakland, Calif.

The body empowered by this resolution was immediately created and is known as the Trade School Sub-committee of the San Francisco M. P. A.'s Apprenticeship Committee, and is composed of Chairman Chas. Moury, assisted by Alexander Coleman, Frank J. Klimm, J. V. Young and Jack Camp.

Chicago Master Plumber Celebrates Golden Wedding Anniversary

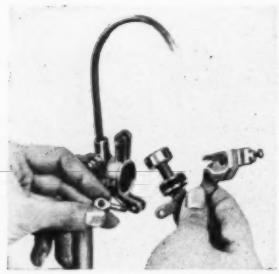
Mr. and Mrs. Richard B. Finn of Chicago celebrated their golden wedding anniversary on Friday, July 1, at their home, 610 East Thirty-fifth Street. Mr. Finn opened his plumbing and heating business on the South Side of Chicago in 1888, and he is still to be found every work day at his main office, 3516 Vincennes Avenue, while his branch office at 3327 West Madison Street is in charge of his son, William A. Finn. Richard B. Finn has been a delegate to twenty conventions of the National Association of Master Plumbers and has friends in almost every part of the country.

Appointed Dealer in Refrigerators

Thumm Heating Company, 651 Chicago Avenue, Evanston, Ill., has been appointed dealer for refrigerators of the General Electric Company. William Thumm, president of this company, has been active in the heating and refrigerating field in and around Chicago for a number of years.

NEW SILENT KOHLER FLOAT VALVE

Float valve with spiral silencer in hush tube.



Remove one screw and valve comes apart

Adjustment screw silences water in refill

SOME closet tanks empty with a rush and rattle. Some refill with a noisy gurgle. But now every low tank can be flushed quickly and quietly with the new Kohler Merit Water Control! A new way to impress customers with the efficiency of your service!

Here are your talking points about the new Kohler Float Valve:

1. **A spiral silencer in the hush tube prevents the usual noisy downward rush of water. Water discharges freely, rapidly, noiselessly.**
2. **All working parts on this new valve can be taken out by simply removing one thumb screw.**
3. **One simple screw adjustment silences water while the tank is being refilled.**

Float rod leverage is easily adjusted. Seat and washers are renewable. Sturdy, substantial fittings are made of real red brass containing an extra amount of virgin copper. Valves operate with high or low pressures. The new valve fits on all low tanks.

Write for information about this new profit-maker. Or, better, see one in action. Kohler Co. *Founded* 1873. Kohler, Wis. *Branches in principal cities.* . . . Show them the Kohler name on every fixture and fitting.

KOHLER OF KOHLER
PLUMBING FIXTURES AND FITTINGS

Obituary

Patrick H. Gleason

Patrick Henry Gleason, past president of the Master Plumbers Association of Brooklyn, N. Y., died at his home, 107 Cambridge Place, in that city on Saturday, July 16, after a few days' illness of pneumonia in his 75th year. Three days before his death he returned from Europe after attending the Eucharistic Congress in Ireland. On the steamer after leaving Ireland he caught a severe cold, which on his return home developed quickly into pneumonia.

Mr. Gleason was born in County Limerick, Ireland, and came to America in his boyhood, settling in Brooklyn, N. Y., where he was connected with the plumbing industry for 60 years, the last 30 years in his own business, his establishment being located at 919 Fulton street. He was a past president of the Brooklyn Association, one of the originators of the United Association of Journeymen Plumbers, Gas and Steamfitters of the United States and Canada, a member of many fraternal organizations, and one of the founders of the Knights of Galena. His funeral was attended by 1,500 persons, of which 700 were plumbers. Three sons, four daughters and three grandchildren survive him.

Richard M. Fahy

Richard M. Fahy, vice president and treasurer of the plumbing concern of M. J. Fahy & Sons, Inc., and treasurer of the Waterbury Automatic Heat & Service Co., both of Waterbury, Conn., died recently at his home in that city after a short illness. Mr. Fahy was also financial secretary of the Waterbury Master Plumbers' Association. His wife, his parents, three sisters and one brother survive him.

Rudolph K. Chase

Rudolph K. Chase, retired plumbing and heating contractor of Syracuse, N. Y., died recently at his home in that city, at the age of 80 years. He was a native of Plainville, Ohio, and for many years conducted a plumbing business in Syracuse, later entering the employ of the Pierce, Butler & Pierce Manufacturing Company.

Thomas O'Connell

Thomas O'Connell of the plumbing firm of O'Connell Bros. at Chippewa Falls, Wis., died as a result of a sunstroke on Tuesday, July 19. He was overcome as he entered the plumbing shop and fell, striking his head on the floor. He was taken to a hospital, where pneumonia developed and caused his death. He was a son of William F. O'Connell, head of the plumbing firm, and he was in his 37th year at the time of his death. He is survived by his parents and by brothers and sisters.

Israel Newman

Israel Newman, a plumbing contractor, died recently at his home in Baltimore, Md., after a lingering illness, in his 57th year. Mr. Newman came to this country from Austria at an early age, and soon entered the plumbing industry with which he was identified for

43 years in Baltimore. He was a member of the Association of Master Plumbers of Baltimore City, Inc. His widow and two sons survive him.

L. C. Sutherland

Louis Carr Sutherland, president of the plumbing and heating concern of G. H. Sutherland Co. at Walla Walla, Wash., died recently at his home in that city.

Frank R. Heck

Frank R. Heck, proprietor of the Frank R. Heck Plumbing Co., Birmingham, Ala., and former vice president of the Alabama Association of Master Plumbers, was drowned July 31, while swimming in the Cahaba River near Birmingham. Mr. Heck was in his 44th year at the time of his death. He is survived by his parents, three sisters and one brother.

Isaac Paine

Isaac Paine, who retired from the plumbing and heating contracting business several years ago, died recently at his home in Brookline, Mass., in his 91st year. Mr. Paine was born in Eastham on Cape Cod and was a descendent of Thomas Paine, who emigrated from England in 1621 and settled in Eastham in 1655. Mr. Paine spent the early part of his life in Eastham. Later he moved to Newton, where he established a heating business. From Newton he moved to Brookline about fifty years ago and became a partner of Mayo & Paine, the latter being the late Henry K. Paine, his brother. This firm became Paine Brothers and continued in the plumbing and heating business for many years. The brothers retired from business at the same time. Isaac Paine is survived by his widow.

George Bullock

George Bullock, president of the International Burners Corporation of New York City and a member of the board of directors of the American Oil Burner Association, died recently at his home in Long Island after an illness of several weeks. Mr. Bullock was also a member of the constitutional committee of the American Oil Burner Association.

Wm. W. Underhill

William W. Underhill, secretary and treasurer of the Stone-Underhill Heating & Ventilating Co., 171 Harrison Ave., Boston, Mass., died at his home in that city after a short illness, in his 68th year. He was one of the founders of the Stone-Underhill company, which was established nearly 40 years ago. He was a member of the American Society of Heating and Ventilating Engineers.

Jos. L. Morrison

Jos. L. Morrison of Hampton, Iowa, traveling representative for the Leighton Supply Co. of Fort Dodge, Iowa, died recently of a heart attack on a visit to Webster City, Iowa, in his 59th year. Mr. Morrison

A powerful team for cultivating new plumbing business

Using these shower cabinets as your opening lead, you can cultivate many remodeling prospects who otherwise would not listen to you. At the same time, you will find that by exploiting the comfort, convenience and speed of shower bathing you can frequently increase the amount of plumbing work—and especially your profits—on new jobs.

Weisway and Weistall Shower Cabinets have demonstrated their ability to produce profits for the plumber who works with them. Furthermore, they are so designed and constructed that service attention after installation is rarely required, consequently you *keep* the profit you make on the sale. Absolutely leakproof, and so easily installed by such simple means that your men can't go wrong, you can depend upon Weis cabinets to deliver year-after-year satisfaction to your customers.

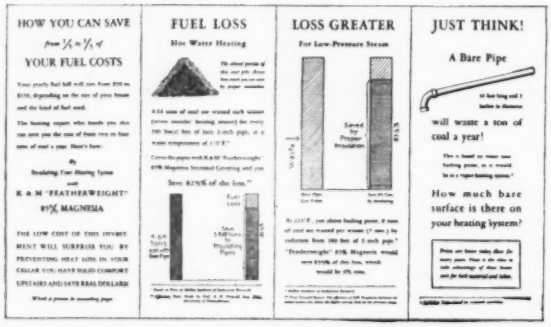
Write today for full information. If you're really after business, we have the team to hitch to your plow.

HENRY
WEIS
MANUFACTURING CO., INC.
ELKHART, INDIANA

. . . . MANUFACTURERS OF METAL BUILDING PRODUCTS FOR MORE THAN FIFTY-SIX YEARS . . . .

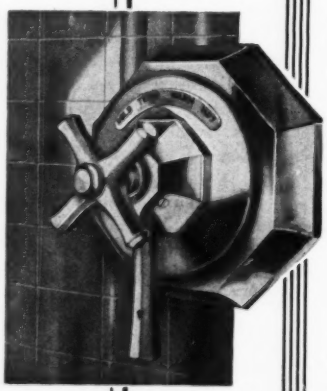
EXTRA PROFIT
On Your Heating Jobs

This 10-page folder proving to the home owner the value of heat insulation is available to you free of charge. It tells why K & M Asbestos Aircell and 85% Magnesia pays dividends. Below are four pages of the folder showing how simply it states the case for you. Send for a copy.


HOW YOU CAN SAVE
YOUR FUEL COSTS
FUEL LOSS
LOSS GREATER
JUST THINK!
A Bare Pipe
will waste a ton of coal a year!
How much bare surface is there on your heating system?

KEASBEY & MATTISON COMPANY
AMBLER « « « » » » PENNSYLVANIA

LEONARD
Water Mixing
VALVES



A complete water mixing valve built for long service. It is the sure way of controlling water temperatures and effecting noticeable water savings.

Easily installed. Exposed parts finished in rustless chromium plating and are of neat modernistic design.

Manufactured by
LEONARD-ROOKE CO.
Incorporated 1913
Providence Rhode Island

had been connected with the Leighton Supply Co. since January, 1920. Previous to this he was for some years engaged in the plumbing and hardware business at Gilmore City, Iowa. He was a veteran of the Spanish-American war, and veterans of this war were in charge of his interment, which took place at the cemetery in Gilmore City. His wife, a son and a daughter survive him.

Col. Weston Jenkins

Col. Weston Jenkins of the Revere Copper & Brass, Inc., Rome, N. Y., and New York City, died Friday evening, July 8, at a tourist camp near Amsterdam, N. Y., in his 52nd year. He was driving from his home in Rome, N. Y., to Albany, N. Y., when he was stricken. Col. Jenkins was commander of the Thirty-ninth Infantry in the world war and served with distinction, being awarded the Distinguished Service Cross and citations in general orders for gallantry and judgment on two occasions.

John E. Ullman

John E. Ullman, president of the Syracuse Chilled Die and Casting Co., Inc., Syracuse, N. Y., died recently of heart disease at his home in that city. He was born in Sweden and came to Syracuse from Worcester, Mass., in 1908 and organized the company, of which he was president. He is survived by his widow and three daughters.

J. Frederick Van Syckle

J. Frederick Van Syckle, formerly a plumbing and heating contractor in Milford, Conn., and for the past five years instructor in steam fitting at the State Trade School, Bridgeport, Conn., died recently at his home in Milford in his 55th year. He sold his plumbing business when he was appointed to the teaching staff at the trade school. He was past commander of the Sons of Veterans, past president of the Milford Wheel Club, a sergeant in the Connecticut State Guard, and a member of the Masonic fraternity. He is survived by his wife and one son.

John E. Allen

John E. Allen, partner in the plumbing firm of Green and Allen, Janesville, Wis., for many years, died recently of a heart attack. He was in his 67th year. He is survived by his widow, and one brother.

Left to right: A. E. Walker, W. E. Collier, W. H. Oliver, F. L. Gibbons and Carl B. Zint, all of Republic Steel Corp., Youngstown, Ohio

Alfred H. Humphrey

Alfred H. Humphrey, president of the General Gas Light Co. of Kalamazoo, Mich., died at La Jolla, Calif., July 8, in his 75th year. He was the inventor of the first gas arc lamp, the first inverted gas arc lamp, an instantaneous water heater, a unit heater and radiant fire, and he was also the inventor of a beer pump. Mr. Humphrey was born in England in 1858. At the age of 14, he was apprenticed to a machinist and blacksmith. Two years later he emigrated to Canada, settling in Toronto. A few years later he moved to Hamilton, Ontario, where he was employed in a machine shop. In 1886 he went to Ypsilanti, Mich., where he operated a machine shop until 1890, when he came to Kalamazoo, Mich. Here he invented the instantaneous water heater, which bears his name, organized the Humphrey Co., and built a factory in 1893. In 1901 Mr. Humphrey withdrew from the Humphrey Co. and organized the General Gas Light Co., which proceeded to develop his invention, the gas arc lamp. In 1906 he organized the General Gas Mantle Co. at Camden, N. J., and opened a factory in that city. In 1916 he invented and introduced his radiant fire to the American market. In 1928 he introduced his unit heater. He is survived by three sons and one daughter. The sons are: Hubert and George Humphrey of Kalamazoo, Harold Humphrey of New York City, and the daughter is Mrs. William Jackson of La Jolla, Calif.

Henry Lyles Zabriskie

Henry Lyles Zabriskie, chief engineer of the Diehl Mfg. Co. of Elizabethport, N. J., died suddenly Sunday evening, July 10, at his home in Westfield, N. J., of cerebral hemorrhage in his 56th year. He was a graduate of Cornell University and had been chief engineer for the Diehl Mfg. Co. since 1903.

Charles I. Williams

Charles I. Williams, one of the founders of Northern Specialty Co. and of the Utica Pipe Foundry, both in Utica, N. Y., died recently at his home in that city in his 77th year. He was born in Utica and spent his entire life in that city.

James Barrett

James Barrett, who had been connected with Worthington Pump & Machinery Corporation of New York City in various capacities for more than forty years, died recently at Columbia Presbyterian Medical Center after a short illness. Mr. Barrett had planned the pumping equipment for many of New York City's important buildings.

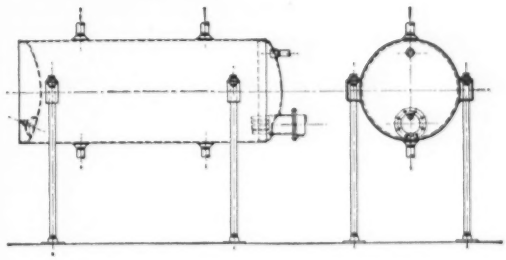
A. A. Zertanna of St. Louis, Mo., who was secretary of the National Association of Master Plumbers under the administration of the late L. McNamara, 1917-1919, has the sympathy of his many friends in the trade on account of the recent death of his mother.

The Saginaw Association of Plumbing and Heating Dealers has elected Charles Heidger as president for the ensuing year. Earl McKenzie is vice president and Alfred Mitchell, secretary.

Opening the way to more business . . .

"KOVEN-PARACOIL"

QUALITY DOMESTIC TANK and HEATER COMBINATION



Have YOU written for full details on the new "KOVEN-PARACOIL" Domestic Tank and Heater Combination? Since its announcement, trade interest has been keen.

Two quality houses, bearing two dependable names, have joined resources to make this Heater an efficient, faultless, guaranteed sales builder for the Plumbing Contractor. Check these features:

For below water line use on steam and hot water installations.

Especially adapted for Oil Burner, Gas or Stoker-fired Boilers.

SAFE
No danger of flooding system.

EFFICIENT
Plentiful supply of hot water.

ECONOMICAL
Low cost of operation. Easy to install.

LASTING
Made in Double Extra Heavy Weight only, galvanized.

SIZES
1 to 10 families

Send coupon below for full details

Other KOVEN Products:

Range Boilers
Storage Tanks
Septic Tanks
Fuel Oil Tanks

TRADE MARK
L.O.K. & BRO. INC.

Expansion Tanks
Pneumatic Tanks
Barber Boilers
Scullery Sinks

L. O. KOVEN & BRO., Inc. DE-8
154 Ogden Ave., Jersey City, N. J.

Gentlemen:

Please send full details on "KOVEN-PARACOIL" HEATER. ☐
Also send Handbook describing other products. ☐

NAME.....
ADDRESS.....
CITY..... STATE.....
MY JOBBER IS.....

MARKETS

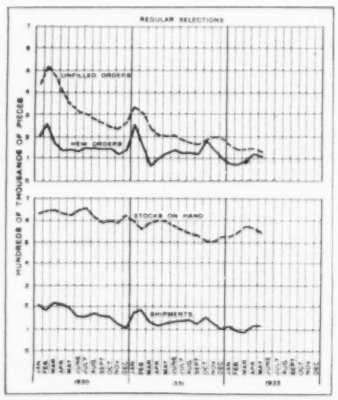
BUSINESS REPORTS FROM LARGE JOBBING CENTERS

NATION-WIDE sales conditions reflect some improvement in August. Collections are better and a greater feeling of confidence is found. While these factors are necessarily intangible and actual, order books are not being used up any more quickly, the change in sentiment is clearly evident and is important.

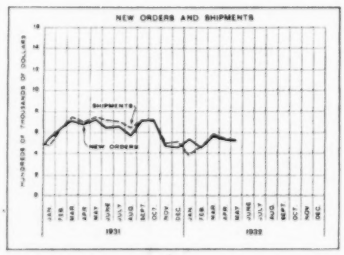
The building industry, while not as promptly responsive to market trends as lighter industries, reflects this generally improved outlook. The daily average of building contracts awarded during July was 15 per cent above those in June, although well below a year ago. Wholesale prices of building materials dropped slightly during the month, the Bureau of Labor Statistics records showing an index of 70.3 on July 2; 70.7 on July 9; 69.7 on July 16, and 69.5 on July 23. One manufacturer of heating boilers has announced an increase of 5 per cent in the list price of its product, effective Aug. 15.

The charts on this page tell in concise form the production and shipment record of various plumbing products. Other records, now available from the Bureau of the Census, Department of Commerce, cover convection type radiators and plumbing brass. These records have only been gathered this year. Sales of convection type radiators, in the first five months of this year, covering heating elements, including cabinets and grilles, total 1,087,609 square feet heating surface in equivalent direct radiation. The May record of 218,431 square feet was the second best so far this year. Plumbing brass shipments in May showed some improvement.

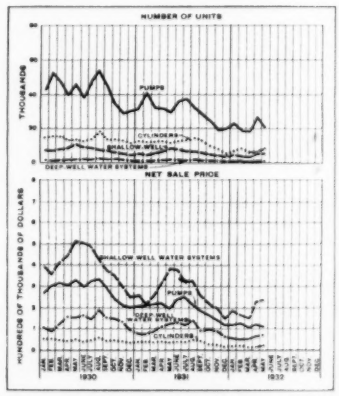
CHARTS BASED ON BUREAU OF CENSUS REPORTS



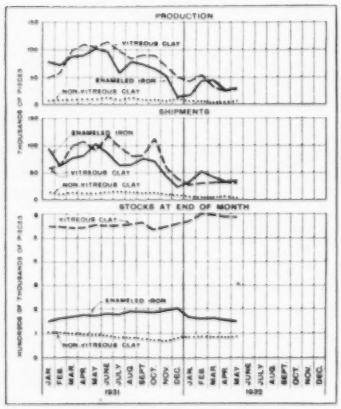
Vitreous China Plumbing Fixtures



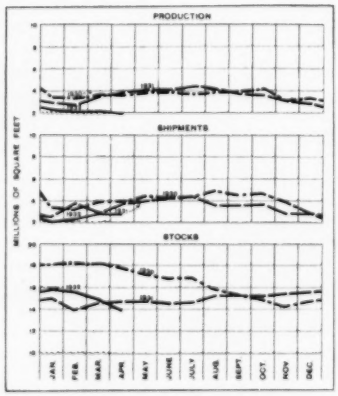
Porcelain Enameled Flat Ware



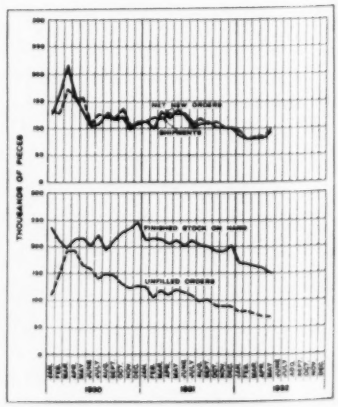
Domestic Pumps and Water Systems



Bathroom Accessories



Floor and Wall Tile



Plumbers' Woodwork

Readers Can Secure Index to Domestic Engineering

Readers of DOMESTIC ENGINEERING can now secure copies of the latest quarterly index, a handy reference to the many articles published in this magazine from April 2 to May 28. Because of the change from a bi-weekly to a monthly, which became effective on June 1, this index covers just two months.

The index is particularly valuable to those readers who bind their copies of DOMESTIC ENGINEERING, although equally useful to those who maintain back copies for their reference value. Subheadings in the index cover associational activities, authors, automatic heat, between ourselves, editorials, golf associations, heating and air conditioning articles, legal questions answered, letters to the editor, manufacturers and wholesalers, markets, merchandising articles, obituary, plumbing articles, questions and answers, retail advertising service, special departments and what women are doing.

The index is a four-page pamphlet and is available to readers on request.

Will Hold Open Air Meeting and Picnic

Preparations for a monster open air meeting and picnic, to be attended by members of the plumbing trade throughout Southern California and their families, were made by the delegates to the Federation of Merchant Plumbers of Southern California in meeting July 16, at Merchant Plumbers Hall, Los Angeles.

The gathering is scheduled for August 20 and the place designated is Brookside Park, Los Angeles. Plans include a golf tournament for the morning, a baseball game between a team of Los Angeles plumbers and one composed of other Federation members elsewhere in the Southern California district for the afternoon, and tennis and swimming events. The picnic will be sponsored by the Pasadena Merchant Plumbers Association.

Approves Plumbing Exhibit

A letter from J. F. Donovan, executive secretary of the National Association of Master Plumbers has been received, enclosing a copy of a letter to President P. W. Donoghue from Robert D. Kohn, chairman, Construction League of the United States. In his letter Mr. Kohn says, "As a result of my visit to the Exhibition today I want to congratulate you and your association on the admirable result of your efforts. I think you have produced a most worth while show and one that is very encouraging at a time like this."

The Construction League of the United States includes in its membership, representatives of the plumbing and heating contractors, general contractors, architects and others interested in the construction field.

The Master Plumbers' Association of Westchester, N. Y., recently elected Timothy Nolan to serve as president for the ensuing year. Arthur Fuchs was elected first vice president; Louis Young, second vice president; Thomas Wright, third vice president; J. J. Lynch, treasurer; Fred Sacher, recording secretary; E. A. Kline, financial secretary; and William H. Finlay, sergeant-at-arms.

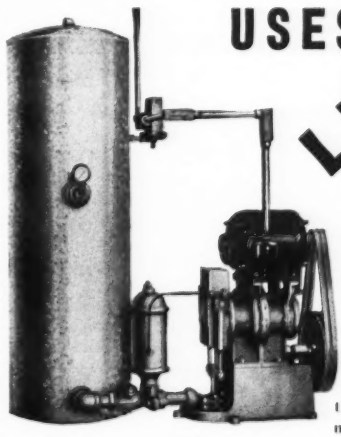
HINDLEY'S

Summer is moving right along, and with it comes the regular volume of repair and remodeling work. Many are your needs for Plumbers' Specialties. If you have HINDLEY'S on hand you are "sitting pretty" as the saying goes, but if you do not have HINDLEY'S, then you better get in touch with us at once. Learn about the saving involved in HINDLEY'S PLUMBERS' SPECIALTIES.

See our line in DOMESTIC ENGINEERING PLUMBING AND HEATING CATALOG

HINDLEY MFG. CO., VALLEY FALLS, R. I.

Plumbers' Specialties



USES LESS POWER and Lasts Longer

The economical operation and long life of a Dorward-Red Jacket Water System are both due to the same feature —the rotary power head. Less power is required because there is less friction and fewer moving parts. Long life is assured because all moving parts are enclosed and run in baths of oil and because there are no oscillating parts to vibrate and wrack the machine to pieces. Too, all parts are strong enough to carry a recommended load without takeup or adjustments of any kind . . . Capacities range from 200 to 10,700 gals. per hour. Prices are in line with modern price trend. Write for Catalog 11, containing complete descriptions and illustrations.

DORWARD-Red Jacket WATER SYSTEMS & DEEP WELL POWER HEADS

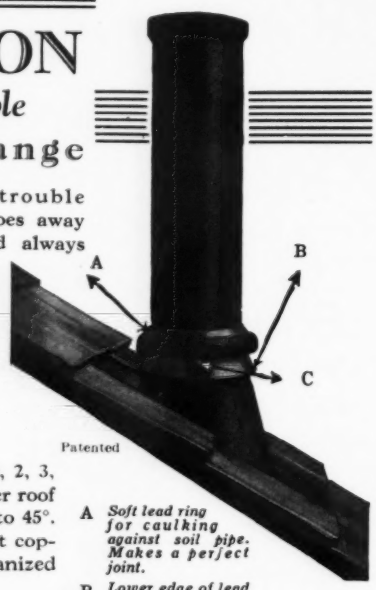
RED JACKET MFG. CO.
DAVENPORT, IOWA

Manufacturers of Pumping Equipment for More than 50 Years.

REDLON
Adjustable
Roof Flange

A real time and trouble saver because it does away with hot lead and always makes a perfectly tight joint that you can depend on.

Fits both standard and extra heavy soil pipe; all you need do in ordering is give size, 2, 3, or 4 in., and whether roof is flat to 25° or 25° to 45°. Made of heavy sheet copper and also of galvanized iron.



Patented

A *Soft lead ring for caulking against soil pipe. Makes a perfect joint.*

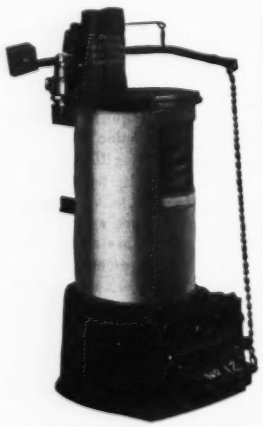
B *Lower edge of lead caulking Ring that dresses back against flashing after adjustment is made.*

C *Rivet that holds hub in place and will let it tip to fit the roof it is placed on.*

O. M. REDLON
Front and Ferry Sts.
BATH MAINE

COPPER COIL
ABSORBS HEAT FASTER
150° HOT WATER 24 HOURS PER DAY

Produced FASTER with copper coil which absorbs most heat from fuel. Bronze fittings; ideal for use with brass pipe hot water lines. Burns coal, needs scant attention in average home. Cost of operation low. Triangular grates. Firebrick combustion chamber. Red vitreous enamel jacket. Heater and installation allow good profit. Write for information or see your jobber.



(Cut away view)
Aqua-Matic Regulator
Outfit Controls Fire
2 to 3 days without fueling
in average family.

MULTI-FLOW TANK HEATER

Manufactured by
THE NATIONAL PIPE BENDING CO.
Est. 1883

174 River Street
New Haven, Conn.

Storage Heaters, Instantaneous Heaters, Feed Water Heaters Coils, Bends

FREE FLO Heating Element

BOSTON NEW YORK PHILADELPHIA

A. S. S. E.—

(Continued from Page 94)

W. C. Groeniger rendered a report of the Research Committee.

He first read a paper by Thos. J. Claffy of the Committee on Drinking Fountains. This paper suggested simplicity in design and freedom from all unnecessary parts. It also stated that the nozzle should be at an angle, above the rim of the bowl, and properly protected by a guard.

He also read another paper by Mr. Claffy, discussing flush valves.

Jos. J. Crotty reported as Chairman of the Sanitary Standards Committee. He stated the work of the Committee was progressing nicely.

A. R. McGonegal of Washington, D. C., presented the report of the Washington Cross Connection Conference.

L. A. Cornelius, chairman of the Memorial Committee, presented Resolutions in memory of the members of the Society, who passed away during the past year.

Geo. J. Dehn extended an invitation for the Society to hold its 1933 meeting in Chicago and A. R. McGonegal extended an invitation to go to Washington.

The Chicago invitation was accepted and on motion of Mr. McGonegal, the acceptance was made unanimous.

RESOLUTIONS PASSED

Among the resolutions passed were several of some importance. One, after setting forth that "it has been determined that a free circulation of air in plumbing systems is necessary to prevent syphonic action, back pressure, and the deterioration of material," stated the conviction of the members that the best interests of the public would be served through the practice of individually back venting all plumbing fixture traps.

Another resolution instructed the incoming president to appoint a committee to take up with the United States government the question of promoting water supply systems and sewage disposal plants as a measure of health protection and to stimulate employment. A third resolved that the Society push the idea that plumbing installation, inspection and re-inspection be under the supervision and direct control of state or local health bureaus.

Observing the divergence in the names applied in different parts of the country to different types of vent, the Society instructed that a committee be appointed to report definite recommendations at the next convention for a glossary of all commonly known venting terms; the committee to have the task of taking up the matter with a large number of chief plumbing inspectors or prominent master plumbers or sanitary authorities.

Everyone in the city of Rochester was on the job, acting in the capacity of official host or hostess to the visitors. Nothing was left undone and every branch of the industry was represented.

OUR READERS TELL US

Advocates Buying America Made Goods

To the Editor:

Although the pipe fittings and nipple industry has not been directly affected by imports or foreign merchandise, we have had erected a large illuminated sign facing the New York Division of the Pennsylvania Railroad, reading:

"the duty of EVERYONE be sure you and your family
BUY MADE IN AMERICA GOODS
—this will greatly help the unemployed
BACK TO WORK"

as a contribution towards the return of Prosperity.

It is our conviction that if more of us were interested in and insisted upon buying and using "Made in America" goods, the unemployment problem would be materially relieved.

If you can print the above, we feel it will help spread the gospel of "BUY MADE IN AMERICA GOODS."

Yours very truly,
S. S. FRETZ, JR. & CO.,
Philadelphia, Pa. A. H. Clark, Gen. Mgr.

We Should Be Paid for Estimates

To the Editor:

There is at present a great deal of energy being expended on various slogans in an effort to stimulate business in all lines of industry. We of the plumbing and heating trade at present stressing the idea of "Spend for the Home," which is very good. Also there seems to be a general idea of placing the blame on the shoulder of some one else; at present the mail order houses are the target.

I am quite convinced that we are not looking the trouble squarely in the face but rather looking for a lame excuse that won't stand the test.

The mail order houses publish their contract in full, that is, they state just what they will give for a stated price.

Therefore, we should be prepared to outsell them on more than one issue, as all they have is merchandise, while we have guaranteed material, expert workmen, bonded and licensed, centralized responsibility and our reputations to put against them.

It seems to me that just at present our biggest bugaboo is "Estimates *cheerfully given*" (free) or with no obligation.

A few years ago it was customary for a home owner to get two or three bids on a job, if it was of considerable size, otherwise he called in his plumber and instructed him to do the work.

Today it is quite the proper thing for a person having a $50 or $75 job to get 10 to 20 estimates, and there is always sure to be one or more to figure the job too low, either by error or otherwise.

Now from our standpoint: Does it pay to bid or work unless we know our man and are sure of a fair deal? Let's be honest with ourselves just once and figure it out.

I feel that I'm not going outside the bonds of ethics when I say that we get one job out of 15 estimates submitted, which means we make 15 calls to measure up the job then go to the shop to make up our estimate.

We then make the second call to deliver the estimate, when we are told that they "are getting several more bids, and kindly call back later." We then make the three calls in an effort to sell the job.

Of course sometimes we sell on the second call and sometimes we go back the fourth time which leaves an average of 3 calls, hence. 15 estimates at 3 calls each equals 45 calls to sell one job.

I ask you in all fairness, is there enough profit in one job to pay for 45 calls and would it not be more profitable as well as dignified to make a small charge for our estimate, which could be credited as a down-payment if we are awarded the contract? This has been done and worked out okay.

No doubt some of us have a better plan; at least we must stop fighting among ourselves, but if we must fight, let's do it together and for ourselves.

Maryland. J. V. L.

When Shall a Manufacturer's Agent Receive His Commission?

To the Editor:

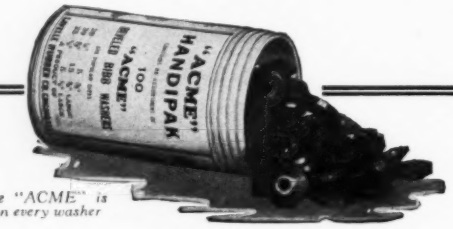
Your publication is not one to iron out the difficulties of the disgruntled salesman, but it is about the nearest approach to such a medium that I can think of. Obviously it is the task of each individual to fight his own battles, but this method has its drawbacks, for he frequently finds himself up against a stone wall and to make any impression it takes more than ivory and cuss words. So with the thought that if you are not interested, the bitter taste will always remain, for we believe that you should be.

You may say, in common with others, that if the agent does not like the contract terms offered, he is a free agent and does not have to accept them. Let us say that an account is offered that he is acquainted with—feels that he can sell—wants, but included in the contract are the objectionable terms. He must either turn it down or accept the half loaf offered.

The objectionable terms are: "When time of payment of commission will be made." Many factories hang on to the old custom of paying commissions *after* they get their payment. No payment—no commission. This is a "hand-me-down" idea, originated in the days of the Stage Coach, when credit rating was based largely upon the reports of the agent. Today, as you know, any statement made by an agent is closely checked from reports of mercantile agencies. So we may safely say that the agent has little or nothing to do with the establishing of the credit risk.

My contention is that the agent has fulfilled his part

Ask for "ACME"— the *unusual bibb washer*



The name "ACME" is stamped on every washer

THE next time you are in need of bibb washers, ask your jobber for "ACME" Bibb Washers—not just ordinary "bibb washers"—and get a bibb washer built to stand up under the most severe service that can befall a bibb washer.

"ACME'S" come to you in seven different sizes, in cans of 100. Or if you are in need of assorted sizes, specify the HANDIPAK, containing 100 washers in assorted sizes—a washer for practically every purpose.

LAVELLE RUBBER CO.
320 W. Illinois St. CHICAGO, ILL.

PHOENIX
BRASS FITTINGS

EVERY Brass Fitting made by PHOENIX is of RED METAL and receives the following tests:

Inspection after Casting.
Inspection prior to Threading.
Inspection of Threading.
Air-Under-Water pressure test.

"If it's a 'P. B. F.' it's a Quality Fitting"

Phoenix Brass Fittings Corp.
Irvington, New Jersey

of the obligation when he sends in an order. When the factory accepts the order and ships it, the commission is due to be paid. The agent has no part in the transaction after the order leaves his hands. He has spent his money, time, energy and good will to get the order. The factory assumes the risk of payment on their own terms, and tells the agent that he will be paid when the account is paid.

In other words, they force the agent to become a partner in the business, with no voice in it, to gamble with them that their credit man has not been too anxious to get an order on the books.

You will be surprised at the different answers received on this question. Think it over. Try it out. The manufacturer's agent needs help.

(Signed) W. M. R.

Don't Fly the White Flag!

C. W. Farrar, president of the Excelso Products Corporation of Buffalo, N. Y., has sent us a copy of his July letter to wholesalers. We are reprinting excerpts because of their timeliness. In a way, they might almost be taken as an endorsement of DOMESTIC ENGINEERING'S sales plan, as described in the June and July issues. Here they are:

"This is no time to give up the fight. There is plenty of money ready to buy plumbing and heating products, if you will just get out and sell. Money is being spent every day, but are you getting a share of this spending?

"Take, for example, the money spent in the New York district last week. A $500,000 gate for the Sharkey-Schmeling fight. Thousands of dollars spent at Fresh Meadow Golf Club to watch the boys try and win 'The American Open.' Thousands of dollars spent by plumbers and their families attending the Golden Anniversary Exhibition of Plumbing and Heating Products, held at Madison Square Garden.

"Never in the history of selling were so many plumbers interested in securing information on products displayed at Madison Square Garden. The trade wants to sell. The trade wants to install new and better products. The plumbing and heating trade are your customers. They want to buy—now. Are you in a position to sell them?

"Don't give up the fight. Get the spirit of the 4th. Blow a new selling atmosphere through your organization. Get out and sell."

A Big Plumbing Installation

(Continued from Page 66)

in the main hospital building, the fire pump in the power house which gets its water from the power house surge tank, and the city main direct through the city fire apparatus which connect to the siamese connections at the building exterior. Steel pipe is used for this system. Each riser has a hose at each floor and terminates with a roof monitor. For the lower floors where the pressure would be excessive with the system in use, pressure reducing valves in the branch for each hose have been installed. The principal unit in this system is a fully approved Underwriters electric centrifugal fire pump, rated for 750 g.p.m. against a 610 ft. head, located adjacent

to the house pumps in the sub-sub-basement of the power house at a grade of —7.0.

The 8-in. suction pipe for this pump is an independent line from the power house surge tank. For the fire pump there is a reserve storage capacity in the surge tank of about 12,000 gallons for fire use only. This quantity is in addition to the storage for domestic use, mentioned above. The necessary test and relief pipes from the fire pump, each 4 in. in size, discharge into the surge tank. The 8-in. discharge from the fire pump connects at the pump to the 8-in. manifold from which 8-in. headers are distributed to various groups. These 8-in. headers run at the power house sub-sub-basement ceiling with an 8-in. plugged connection for a future building east of the power house, an 8-in. branch through a tunnel to the nurses home, and an 8-in. branch through each of the connecting tunnels to the main hospital. From here, 8-in. branches are run to the medical school, the women's clinic and the psychiatry building.

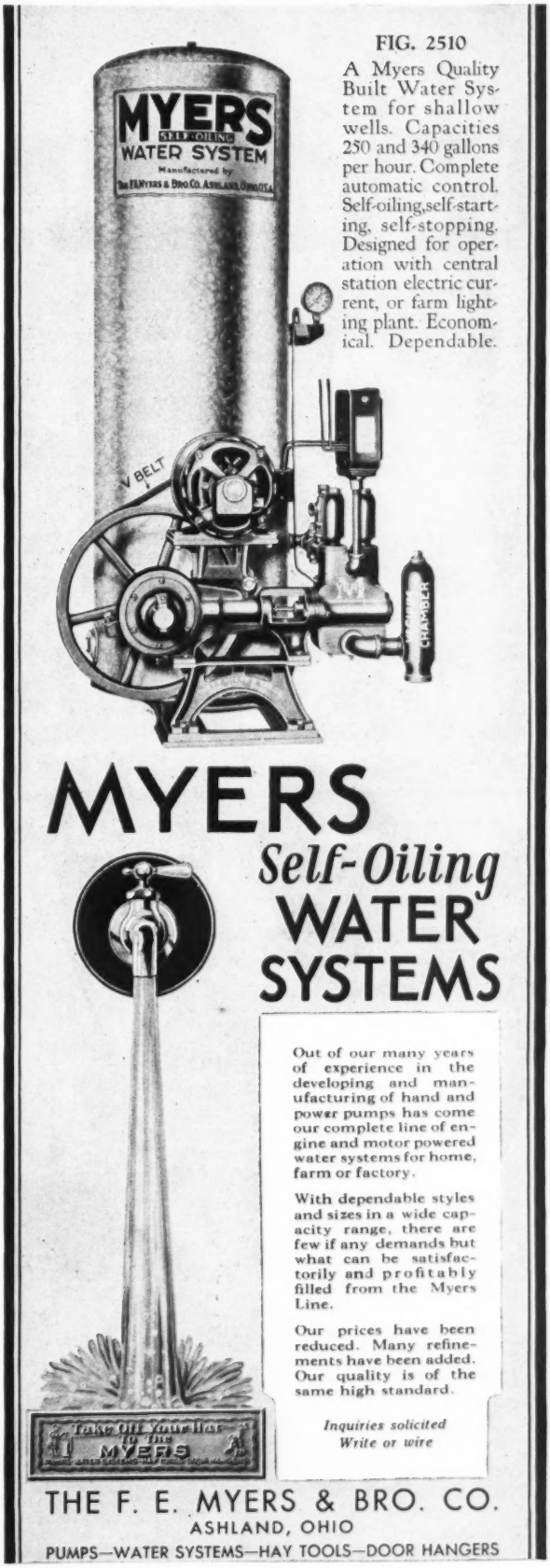
LOCATION OF SIAMESE CONNECTIONS

The 8-in. header is formed by connecting to all of the steamer siamese connections with 6-in. branches. These siamese connections are located as follows: 71st Street, one each for the nurses home and the power house; York Avenue, two on the nurses home and four on the medical school; on 68th Street, one each on the medical school and the psychiatry building and two on the main hospital; on Exterior Street, two each on the psychiatry and the women's clinic buildings; on 70th Street, one each on the women's clinic, the medical school and the power house and four outside of the main hospital.

The standpipes throughout are connected to this header. The two 8-in. standpipes for the center section of the main hospital are connected at the top and from this, an 8-in. connection, which may also serve as a down-supply, is run to the high zone tank. There is a reserve storage capacity of about 15,000 gallons for fire use in this high zone tank which is not included in the domestic-use capacity of this tank mentioned above.

In addition to this city water, provision is made for the use of salt water for fire protection. This is accomplished by having on the Exterior Street wall of the women's clinic building, a siamese connection to which the fire boats may attach their hose. From this connection, a 4-in. line is run through the buildings, having no outlets, to a siamese connection on the York Avenue exterior wall of the bacteriology wing of the medical school. A fire hose may be attached to this connection. This salt water line is not connected to the fresh water system.

Record plans of the entire project are being prepared. These consist of floor plans on which will be shown all of the fixtures and piping as installed with particular attention paid to the location and the numbering of the valves. There will be prepared in a convenient form, a valve chart which will list all of the valves, give their locations and tell what fixtures, rooms or sections of the building are controlled by each valve. The numbers on this list will correspond with the numbers on the record plans. To further facilitate maintenance, all pipes will be stenciled with the name of their service.


MYERS
SELF-OILING
WATER SYSTEM
Manufactured by
THE F. E. MYERS & BRO. CO. ASHLAND, OHIO U.S.A.
V BELT
CHAMBER
MYERS
Self-Oiling
WATER
SYSTEMS
Out of our many years of experience in the developing and manufacturing of hand and power pumps has come our complete line of engine and motor powered water systems for home, farm or factory.
With dependable styles and sizes in a wide capacity range, there are few if any demands but what can be satisfactorily and profitably filled from the Myers Line.
Our prices have been reduced. Many refinements have been added. Our quality is of the same high standard.
Inquiries solicited
Write or wire
Take Off Your Hat to the MYERS
THE F. E. MYERS & BRO. CO.
ASHLAND, OHIO
PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS
FIG. 2510
A Myers Quality Built Water System for shallow wells. Capacities 250 and 340 gallons per hour. Complete automatic control. Self-oiling, self-starting, self-stopping. Designed for operation with central station electric current, or farm lighting plant. Economical. Dependable.

WOLVERINE BRASS

Dependable

COMPARE! Compare Wolverine Brass Goods of *today* with the same goods of 1929! You'll find them even better. You'll find many improvements. You'll find even greater values. And you'll find, as always, the same high quality of materials—painstaking care and accuracy in machining—fine finish.

As ever, Wolverine Brass Goods remain completely dependable. As ever, Wolverine keeps faith with the plumbing trade.

WOLVERINE BRASS WORKS
GRAND RAPIDS, MICHIGAN
We Sell the Retail Plumbing Trade

WOLVERINE

ARMSTRONG BROS.

announces a further improvement on "Barnes Type" Pipe Cutters

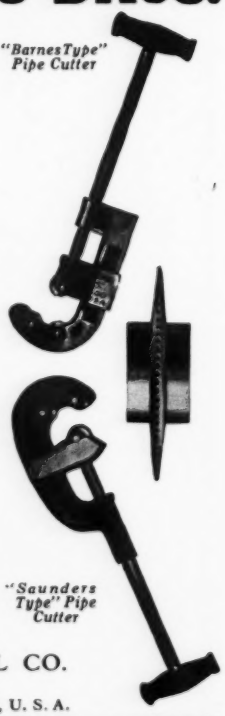
ANOTHER important improvement has been made on the ARMSTRONG BROS. "Barnes Type" Pipe Cutter—an improvement that multiplies the service these cutters will give.

Cutter wheels, pins and rollers are easily replaceable, but when the internally threaded part of the body of a pipe cutter—the thread that absorbs the thrust when you tighten the wheel down on the pipe—when that is worn out it means a new pipe cutter.

Now, this part of the ARMSTRONG BROS. "Barnes Type" Pipe Cutter is made of Drop Forged Steel. This newest improvement adds years to the life of these cutters, cuts replacement costs to a fraction.

Each ARMSTRONG BROS. Pipe Tool is an improved tool—improved in design, in material and workmanship. To distinguish these "Better Pipe Tools" look for the Arm-and-Hammer Trade Mark. It guarantees satisfaction.

Write for Catalog



ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave. CHICAGO, U. S. A.

Bear Hunt—

(Continued from Page 57)

into the alders toward the place where the first bear had disappeared. They had made their way nearly through the alder patch when a huge bear appeared in front of them, roaring in rage and defiance.

Pacing afterward proved that the animal was less than 45 ft. from the men, and, as Mr. Cornelius puts it, a bear standing 10 ft. high can cover 45 ft. in short order. Alaskan game regulations prohibit a guide from shooting at big game unless the hunter he is guiding is in actual danger. This is to prevent the guide from making a kill for his employer.

Walker apparently considered himself and Mr. Cornelius in immediate danger, and his rifle was at his shoulder at the bear's first roar. Before the huge animal could drop to all fours for the charge and before Mr. Cornelius could step to one side to shoot past the guide, who was a few paces ahead, Walker sent a lucky shot into the bear's brain, killing it almost in its tracks.

Marking the place so they could return to the scene the following morning, the two men went on through the alders to search the slope, where the bear had been seen when Mr. Cornelius fired the second shot. They could find no trace of blood but they did discover a wide track leading into the alders. Dusk was beginning to fall by this time, and the guide decided it was too dangerous to follow this track.

To get back to the boat the men were compelled to go through the alder thicket. Mr. Cornelius was leading the way, and they had no more than entered the patch when the head of a second large bear came up from a brush-concealed hollow only 18 ft. away, literally towering over Mr. Cornelius. He shot automatically, he says, the bullet piercing the animal's throat and lodged in its brain and the bear tumbled over dead on the spot. Investigation revealed that the first shot fired by Mr. Cornelius, had broken down the hindquarters of the animal, preventing it from pouncing upon the men, and to this fact Mr. Cornelius undoubtedly owes his escape from a bad mauling and probable death.

The killing of this bear which measured 9 ft., ended the hunt, as it filled the licenses of the two men, and they left Kodiak Island for Seattle May 19, as proud and happy a pair of big game hunters as ever began a homeward journey, having seen a total of 38 Kodiak bears, of which six were of unusual size.

Wm. H. Kuhns

Wm. H. Kuhns, a plumbing contractor in St. Louis, Mo., died at his home in that city on Wednesday, July 13, of infirmities of age in his 78th year. Mr. Kuhns came from Philadelphia to St. Louis in 1877 and started his plumbing business which he conducted until his death. He was a past president of the St. Louis Association, his term of office being the year 1896. Last year he and Mrs. Kuhns celebrated their golden wedding anniversary. His widow, three sons and a daughter survive him. One of his sons was associated with him in the plumbing business and will continue it, and another son is connected with the St. Louis branch of Crane Co.

NEW TRADE LITERATURE

Folder on Sink Faucets

Hays Mfg. Co. of Erie, Pa., has just issued a folder, printed in two colors, illustrating and describing its line of sink faucets with swinging spouts for all types of sinks in homes and apartment houses.

Folder on Stokers

Fuel Savers, Inc., of Harrisburg, Pa., has just issued a four-page folder, 8½ x 11 in. in size, illustrating and describing its line of stokers, which are built in several sizes to fit different boilers and heating loads.

Folder on Forged All-Brass Unions

Providence Fittings Co. of Lockport, N. Y., has issued a four-page folder describing and illustrating its line of forged all-brass unions for steam, oil, water or gas pressure for installation where brass pipe is used.

Catalog of Zerozone Products Corporation

"Cold Facts" is the title of a new catalog which has just been issued by the Zerozone Products Corporation of New York City. This catalog consists of 16 pages, 7⅝ by 10¼ in., illustrating and describing in detail this concern's large line of electric refrigerators, their construction and operation.

Monel Metal Sinks

The International Nickel Co., Inc., of New York City has just issued a four-page folder, 8½ x 11 in., illustrating and describing its line of rustproof monel metal sinks. These sinks are described as having a silvery satin finish which blends perfectly with any color scheme and harmonizes contrasting colors.

Gray Iron Meter Boxes

H. W. Clark Company of Mattoon, Ill., has issued a neat four-page folder, 8½ x 11 in., featuring its line of gray iron meter boxes, with drums and forged bronze locks, made in various sizes. These meter boxes are pictured and described in detail in this folder, which is printed in two colors, black and green.

Bulletin on Refrigerating Units

Ross Heater & Mfg. Co., Inc., of Buffalo, N. Y., has issued an eight-page bulletin, size 8½ x 11 in., illustrating and describing in detail its line of refrigerating units for moderate temperatures. Special attention is devoted to their construction, operation and space requirements. Diagrams and tables add to the value of this bulletin.

Welding Electrodes

The Metal & Thermit Corporation of New York City has issued a 16-page booklet, 8¾ x 11¼, describing numerous applications of inorganic flux coated welding electrodes. The welding of mild steel and boiler plate, stainless steel alloys, manganese steel, high carbon steel and stainless iron is described. The repair of castings and heavy parts is also covered.

Circular on Air Cooling and Conditioning

Chicago Pump Co. of Chicago, Ill., has issued a four-page circular, 8½x11 in., illustrating and describing its air cooler, in which ice and ice water are used as the cooling medium. Its operation is described as follows: "By means of a fan, warm air from the room is drawn into the cabinet through an air intake grille and forced out through the cool air discharge. As the air is forced through the cooling coil these three things take place: Air is cooled. Excess moisture in the air is removed

These Are the Days to Follow Up the Little Things . . .

If the big jobs are missing—follow up the little ones for present profit and future good-will. For example—how many homes, apartments, hotels or other buildings have leaking faucets, shower heads or ball cocks' And, while repairing them, you can make Bead Chain replacements on the fixtures.

There are several ways to follow up jobs. Use your windows. Telephone. Make a round of calls. Circularize.

We have attractive circulars describing Bead Chain for lavatories, tubs, shower curtains, laundry trays and boilers, with space for imprint, that will be sent free to plumbers who write us on their letterhead. State the quantity you can use. And with them, we will send copy for a suggested letter or circular featuring the replacement of leaking washers.

USE
BEAD CHAIN
FOR PLUMBING
Trade Mark Reg. U. S. Pat. Off.

THE BEAD CHAIN MFG. COMPANY
Bridgeport, Conn.

Manufacturers of Bead Chain for Plumbing, Electric, and other industries.

LIQUID SOAP FIXTURE

Latest design push-in type. Pressing of button delivers measured quantity of soap. At no position of button can soap run in steady stream. Nickel-Plated or Chromium finish. Send for catalog.

Imperial Brass Mfg. Co.
1231 West Harrison Street
Chicago, Illinois

There is no surer way to make a pipe wrench safe and strong than to make it all steel *like TRIMO*

. . years of experience dictated the design

. . common sense dictated all steel construction

Made by the world's leading makers of pipe tools
TRIMONT MFG. CO., Roxbury (Boston), Mass.

A REAL TIME SAVER

Do your next few soldering jobs with YAGER'S SOLDERING SALTS. Watch your time as you go. Then note how much time you saved. You will find that solder is worked easier and flows faster, saving time on every job. This time added up means a saving in labor at the end of each month.

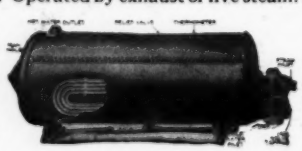
Write for a free sample

ALEX R. BENSON CO., Inc., Hudson, N. Y.
Sales Agency for Canada:
CANADIAN GENERAL ELECTRIC CO., Toronto and Montreal

Patterson Hot Water Heaters

Patterson Hot Water Service and Storage Heaters are guaranteed to supply all the hot water required, as hot as required, and as quickly as required. Operated by exhaust or live steam.

Thousands in use. Backed by over 50 years' experience.



Made for any service, in any size, with or without copper lining. Write for catalog.

THE PATTERSON-KELLEY CO.
106 East 40th Street New York, N. Y.

when air comes in contact with cool coils. Air is cleaned as it passes over wet coils. The ice water is pumped and circulated from bottom of cabinet through cooling coil, then back to bottom of cabinet." This device is suitable for use in hospitals, hotels, shops, stores, offices, bedrooms, nurseries, etc., and it is well-proportioned and attractively finished.

The Uses of Plate Metal in Mechanical Equipment

The American Rolling Mill Co. of Middletown, Ohio, has just published a bulletin on the "Uses of Plate Metal in Mechanical Equipment." The bulletin emphasizes the importance of choosing the right plate for various services in the boiler room, particularly in coal hoppers and stokers, boiler blow-off tanks, breechings and stacks, ash handling equipment, storage tanks and water cooling tanks.

Catalog of Steel Boilers for Oil Burning

Fitzgibbons Boiler Co., Inc., of New York City and Oswego, N. Y., has issued an eight-page catalog, 8½ by 11 in. in size, describing and illustrating its new steel boilers for oil burning with automatic combustion control. The catalog is printed in three colors, black, red and green, and it describes these steam and hot water boilers in detail, including ratings and dimensions. The point is emphasized that these boilers have been designed for oil burning and will co-operate with oil burners for best results.

Bulletin of Commodore Heaters Corporation

Commodore Heaters Corporation of New York City has issued a bulletin, listing the capacities of its built-in heaters. Complete tables are given for the most popular series and designs, such as the concealed type, the flush type, the offset type and the floor type. The tables give the equivalents in square feet of direct steam radiation. This makes it possible for those who are accustomed to do their figuring in terms of exposed radiators to convert their computations into built-in terms and values without possibility of error. In addition to the tabular matter, there are also a number of illustrated suggestions for installations.

Blake Specialty Co.'s Supplementary Catalog

Blake Specialty Co. of Rock Island, Ill., has just issued a supplementary catalog, 8 pages, 8½x10½ in. in size, illustrating and describing floor, swimming pool, roof, garage, shower, gutter and industrial drains as an addition to the line shown in its general catalog of 1929 and 1930. The drains, to which most attention has been given in this catalog, are the following: Back water, deep seal, floor drain with brass swinging gate valve; extra heavy gutter drain with dome grate and safety pan; nickel-plated, adjustable brass shower head, cast iron P trap, with or without cleanout; small pattern, square garage drain for private garage, and long roof spigot drain for vertical connection with spigot drain.

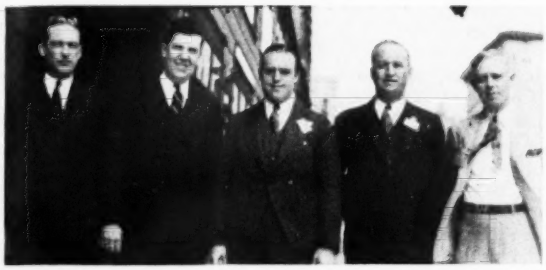
"Ideal Heating for Cottage and Skyscraper"

"Ideal Heating for Cottage and Skyscraper" is the title of a catalog which the American Radiator Co. of New City has just issued. This catalog consists of 52 pages, 8½x5½ in. in size, and it covers the company's line of products with descriptions and illustrations. The first pages of this catalog are devoted to excerpts from an article which was originally published in the Pictorial Review, and which the American Radiator Co. is reprinting by permission, because it places so clearly before the home owner the vital importance of having the right heating equipment in the home. This article is entitled "How to Heat Your Home," and it emphasizes the point that every house constitutes an individual problem in heating. The next article

is entitled "Four Ways to Modern Heating—Steam, Hot Water, Vapor-Vacuum and Vacuum." Other sections of the catalog contain treatises on "Radiator Heat," "Boiler Efficiency," "Heating Boilers," "Radiators," "Heating Accessories," "Automatic Hot Water Supply," Temperature and Damper Control," and "Automatic Humidification."

New Water System Catalog

Fairbanks, Morse & Co. of Chicago have published a catalog, H-405, showing their new line of shallow and deep well water systems for supplying water under pressure from any source, to farm, town, suburban and city homes, country clubs, golf clubs, rural estates, greenhouses and nurseries, country schools and churches, dairies and mills, factories, etc. These systems can also be used as boosters in apartment houses, hotels, hospitals, public buildings and office buildings. The catalog consists of 102 pages, 8½ x 11 in., and does not only describe and illustrate in an attractive manner the various pumps, but it also contains complete data and engineering information most helpful to dealers figuring on pump installations for their customers.



Left to right: N. W. Wade, Memphis, Tenn., water department; Floyd Johnson, Frank H. Mueller, George White and William C. Heinrichs, all of the Mueller Co., Decatur, Ill. Photo taken at the annual convention of the American Water Works Association, held recently at Memphis

Bulletin Announcing Oil Fired Steel Heating Boiler

Brass Foundry & Machine Co. of Fort Wayne, Ind., has just issued a four-page bulletin, 8½ x 11 in. in size, announcing a new boiler of all welded steel construction in accordance with the A. S. M. E. Code for Steel Heating Boilers. Among the features of its construction emphasized in this bulletin are the following: Flange quality steel plates, 5/16 in. thick, are used in the boiler proper for strength, while seamless copper tubes of No. 16 gauge are employed for heat transfer. This boiler has been designed to develop the maximum efficiency of the gun type oil burner, and its design permits of a very small boiler of large capacity. It is available in sizes to take care of any steam radiation load up to 2,500 sq. ft., and any hot water radiation load up to 4,000 sq. ft.

Heating Boiler Circular

Sharp & Van Fleet Mfg. Co. of Dover, N. J., has issued a circular, 11½x17½ in., describing and illustrating its round, cast iron, house heating boiler, which is designed to secure the following results: To provide a long flue travel in a boiler with a small grate area, to eliminate nipples from round boiler construction, to provide sufficient height of flue for ample draft even if partly obstructed by soot, and to reduce manufacturing and erection costs to the minimum. The circular states that these objects have been secured by making the boiler in two halves, split from top to bottom like a cut apple. The two halves are joined together at the bottom by one cast malleable push nipple which acts as a water balance, and they are joined at the

PIPE FITTINGS

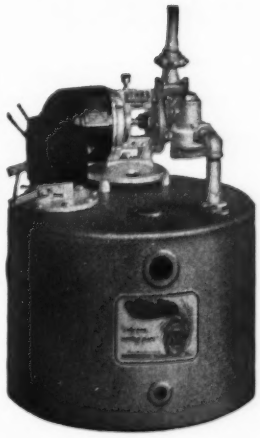
Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.
MANUFACTURERS OF BRASS AND IRON VALVES

BURKS SUPER-TURBINE PUMPS



SERIES 4700

WINTER'S COMING!

Put that "bad order" heating plant in shape by installing the *Burks Super Turbine Condensation Return Unit.*

A positive displacement turbine-type pump that will return heating system condensate back into the heating boiler efficiently and automatically.

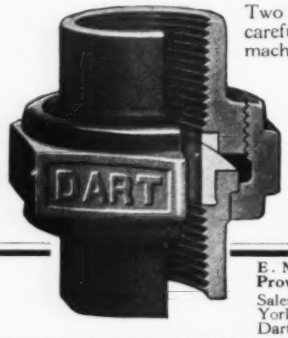
Will not steambind!

Capacity per unit 2000 to 12000 square feet of direct radiation.

SEND FOR BULLETIN NO. 95.

DECATUR PUMP COMPANY DECATUR, ILLINOIS

TWO BRONZE TO BRONZE SEATS



Two Bronze to Bronze Seats . . . carefully ground and accurately machined . . . protect the joint . . . assure freedom from leaks and corrosion. Pipe ends and nut of heavy air refined malleable iron. These features are the foundation for DART'S greater strength.

Write for the DART story.

E. M. DART MFG. COMPANY
Providence ◆ Rhode Island
Sales Agents: The Fairbanks Co., New York Branches . . . Canadian Factory: Dart Union Co., Ltd., Toronto, Canada

BARRETT
PLUMBER'S *Rough* BRASS *Goods*

The Standard — *Compression Stops* — *Compression Stops and Wastes* — *Ground Key Line* — *Waterworks Brass Goods* — *of Comparison*

THE CLEVELAND BRASS MANUFACTURING COMPANY
4606-4700 HAMILTON AVENUE CLEVELAND, OHIO

• WARNOCK •
Triple Wear Wrenches

The Warnock wrench is easyto adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

For chrome, brass and nickle plated pipe

WARNOCK MFG. CO., Worcester, Mass.

TABER SUMP PUMPS IN GENERAL USE

Built for 5 ft. pit. Single and Duplex Units

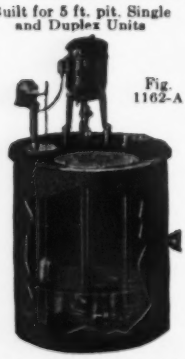


Fig. 1162-A

Sold with and without tank

The larger Taber Sump and Sewage Pumps are being specified and used on jobs requiring high grade equipment. Following are single unit sizes in general use. . . . 1750 R.P.M. 60 Cycle and Direct Current.

Type	G.P.M.	Head	Outlet,in.	Plate in.	H.P.	Wgt. lbs.
AL-25-2	25	20	1	24	½	272
AL-50-2	50	20	1¼	32	¾	350
AL-75-2	75	20	1½	36	1	436
AL-100-2	100	20	2	36	1½	481
AL-150-3	150	20	2½	36	2	607
AL-200-3	200	30	3	36	3	675
AL-300-3	300	30	4	36	5	772

Write for complete Bulletin 88-629

TABER
TABER PUMP CO. *Est. 1859*
Taber Pump Co., 290 Elm St., Buffalo, N.Y.

top by two tees and a long screw and lock nut which act as a steam balance. In this way the boiler is adapted to steam or hot water without change.

Bulletin About Round Steel Boilers

Kewanee Boiler Corporation division of the American Radiator and Standard Sanitary Corporation, Kewanee, Ill., has just issued a new bulletin consisting of four pages, 8½x10⅝ in. in size, illustrating and describing its new welded, round steel heating boiler for burning oil or gas, designed for residence heating and for all work of that size. Special attention is called to this boiler's two-pass tube feature which means economy. In describing this economy this bulletin says: "The temperature of the exit gases is lowered at least 1,000 degrees by the two-pass tubes in this round steel boiler. That saving amounts to one-third or more of the heat in the furnace. Low stack temperatures prove that all those useful units of heat are 'assimilated' inside the boiler, due to this secondary heating surface of the tube nests. That's one reason why the boiler efficiency registers as high as 80 per cent in scientifically conducted tests, and approximates similarly high figures in everyday practice without special care."

Unit Coolers and Unit Air Washers

Buffalo Forge Company of Buffalo, N. Y., has just issued two bulletins, one describing and illustrating its unit coolers and the other, its unit air washers. The unit coolers are of the ammonia type with large capacity, suitable for store rooms, refrigerator rooms, butcher shops, fur vaults, dairies and any room where constant low temperature is required. These coolers using cold water or brine are also suitable for cooling offices, restaurants or stores. The unit washers, on the other hand, are designed to provide washed, properly tempered air at low velocity for cooling offices, schools, factories and restaurants. To operate these units it is only necessary to connect them to the water line, the drain pipe and the electric current. Used as cooling and air washing units in warm weather, they will furnish heat in cold weather when provided with a heating coil.

Catalog of Temperature Control Valves

The Capitol Brass Division of the Bohn Aluminum & Brass Corporation of Detroit, Mich., has issued a 20-page catalog, 8¾ x 11¼ in., describing and illustrating its line of temperature control valves. These valves are graduated packless supply valves, having temperature control units that automatically permit just the right amount of steam or water to enter the radiator to maintain the room temperature desired. These valves can be used on any two-pipe steam or hot water heating system. They will open or close when there is a variation in the room temperature of one or two degrees. They are actuated or caused to open and close only by the actual temperature of the air in the location where the valves are installed.

Exhibit of the Reading Iron Co. at a recent display of plumbing products

NEW CONTRACTORS & INCORPORATIONS

Hawthorne, Calif.—W. M. Long has opened a plumbing and heating shop at 705 El Segundo road.

San Francisco, Calif.—Jacob Rosen has opened a plumbing and heating business at 1918 Hayes street.

Minot, N. D.—Harry Mowbray has opened a plumbing and heating business on South Main street in this city.

Des Moines, Iowa.—F. G. Alward has opened a plumbing and heating business at 3714 Ingersoll avenue in this city.

Los Angeles, Calif.—Frank Hufnagel has established a plumbing and heating business at 7793 Santa Monica boulevard.

White Bear, Minn.—The Western Sales Co. has engaged in the heating contracting business under the management of B. K. Rice.

Gloversville, N. Y.—Pyne & Gifford is the style of a new plumbing and heating firm, which has just started in business at 3 Lincoln street.

Sumner, Wash.—The Sumner Plumbing & Heating Co. is the name of a new business which has just been started here by D. V. Rickert and M. I. Stacy.

Los Angeles, Calif.—S. Tartikoff & Sons have opened a plumbing and heating business at 2430 Wabash avenue. The members of the firm are S. and L. Tartikoff.

Bismarck, N. D.—L. N. Belden and A. Doderquist have formed a partnership under the name of Bismarck Plumbing & Heating Co. and have started in business at 806 First street.

Klamath Falls, Ore.—The Starr Company has been incorporated with a capital of $5,000, to conduct a plumbing business. The incorporators are: J. J. Lorenz, M. Starr and Tracy Starr.

Buffalo, N. Y.—Patrick J. Donovan, Inc., has been chartered to establish and operate a plumbing business. The incorporators are Patrick J. Donovan, Walter Cantwell and Josephine Hooley.

Jamaica, N. Y.—A. J. Wagner, Inc., has been chartered with a capital of $10,000, to establish and conduct a plumbing contracting business. Porte & Porte, a local law firm, represents the new concern.

Wilmington, Mass.—The Wilmington Plumbing and Heating Co. has just started in business in this town. Victor J. Clark of Wilmington and Daniel Keefe of Malden are the owners of the new company.

New Haven, Conn.—Harvey D. Gordon Co., Inc., has been chartered with a capital of $10,000, to conduct a plumbing and heating business. The incorporators are H. D. Gordon, Louis Goldstein and R. Gordon.

Los Angeles, Calif.—Harry L. Bailey has opened a plumbing and heating business at 3419 London street. Mr. Bailey was formerly connected with the plumbing firm of Coony & Winterbottom in this city.

New Haven, Conn.—S. Cohen, Inc., has opened a plumbing business at 54 Waverly street. The officers of the company are: Joseph Kogan, New York, president, and Samuel Cohen, New Haven, secretary-treasurer.

Buffalo, N. Y.—The Black Rock Plumbing Co. has been incorporated to establish and operate a plumbing business in the Black Rock section of this city. The local law

VALUE is the outstanding demand of the day

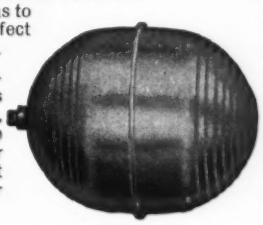
The turn to careful buying has resulted in capacity business for the Reichert Line of Tank Balls and Floats.

The low price of the LEADER Tank Ball, a price heretofore unheard of in tank balls, has resulted in an immediate acceptance of this super-value tank ball.

Only the highest grade of rubber goes into the LEADER and it is so constructed as to allow for a perfect seat every time.

The LEADER

TOLEDO Solderless Floats continue today, as they have year in and year out, as the float with the longer life.



The TOLEDO SOLDERLESS

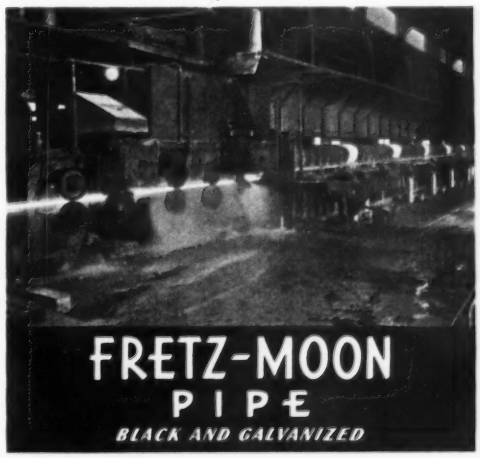
Write today for Reichert's profit story

THE REICHERT FLOAT & MFG. CO.
2238 SMEAD AVE. TOLEDO, OHIO

Do You Know *how* PIPE *is* MADE?

If you are familiar with the methods of making ordinary pipe, this illustration will be a revelation. It shows a Fretz-Moon Continuous Furnace and Mill in which Fretz-Moon Pipe is made—a process different from any other. Write for a copy of the Fretz-Moon Pipe Book—it tells all about the making of this money-saving, long-lasting pipe.

FRETZ-MOON TUBE CO., Inc. • Butler, Pennsylvania



..COPPER *for* SATISFACTION

..G&C..
COPPER
TANKS and
BOILERS

represent the cumulative experience of more than 25 years of specialized study and experience.

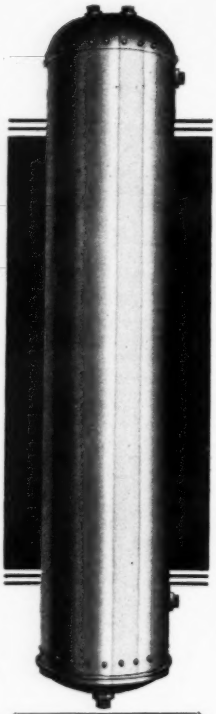
When you specify—and use G & C Copper Tanks and Boilers you are positive of getting the BEST. For every G & C product is produced under the most rigid engineering standards with many exclusive G & C features developed in our own engineering department.

Write for descriptive circular of the new, improved

G & C Domestic Copper Range Boiler

An improved type boiler that corrects the disadvantages of ordinary hot water boilers and simplifies the sales problems of the dealer.

GERSTEIN & COOPER
1-3 West Third St., So. Boston, Mass.



SPECIFY G & C BOILERS
There is a type for every installation — for hotels, apartments, clubs, residences, public buildings, etc.

Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.
Tempered Steel
MADE FOR LONG RUGGED SERVICE

The Worcester line is complete.
Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS

firm of Grass, Findlay & Grass represents the new concern.

Los Angeles, Calif. — The Olympic Plumbing Co. has opened a plumbing and heating establishment at 9730 Santa Monica boulevard. F. W. Hopkins, former manager of the Beverly Hills branch of the Thomas Haverty Co., is the owner of this new business.

New York, N. Y.—T. J. Connelly, Inc., has been chartered with a capital of $20,000, to establish and operate a plumbing contracting business. The new concern is represented by G. H. McHugh, 156 East 102nd street.

New York, N. Y.—Capitalized at $10,000, the firm of Finocchi and Di Pillo, Inc., has been chartered, to establish and operate a plumbing contracting business. M. W. Hayden, 4059 White Plains avenue, represents the new company.

Stamford, Conn.—J. F. McNamara & Son, Inc., has been chartered with a capital of $25,000 to conduct a plumbing contracting business. J. F. McNamara, Edward C. Jansen and Margaret Hogan, all of this city, are the incorporators.

New York, N. Y.—The Mayfair Plumbing & Heating Corporation has been incorporated with a capital of $10,000, to establish and operate a plumbing and heating contracting business. H. Kirschbaum, 67 West 44th street, represents the new concern.

New York, N. Y.—The Bernson Plumbing and Heating Corporation has been organized, with a capital of $20,000, to establish and operate a plumbing and heating contracting business in the Bronx. The new concern is represented by A. Dlugoff, 154 Nassau street.

New York, N. Y.—The Landes Engineering Company has been organized and incorporated, with a capital of $20,000, to establish and operate a plumbing engineering and contracting business. Samuel Metz, 570 Seventh avenue, represents the new concern.

Los Angeles, Calif.—Poole & Coleman is the style of a new plumbing and heating firm, which has just started in business at 4767 South Broadway. The partners are H. S. Poole, a former journeyman plumber, and T. F. Coleman, formerly a general building contractor.

New York, N. Y.—With a capital of $20,000, the Seagirt Plumbing and Heating Corporation has been chartered, to establish and operate a plumbing and heating engineering and contracting business. H. Chasanoff, Edgemere, Long Island, represents the new firm.

Los Angeles, Calif.—The Southern California Heating Co. has been incorporated with a capital of $25,000, to conduct a plumbing and heating business in this city. The incorporators are: Joseph Naurocki and Wilbur E. Dow, both of Los Angeles, and C. B. Naurocki of Van Nuys, Calif.

Los Angeles, Calif.—The Jack Leo Plumbing Co. has just been organized by Jack Leo, for the last nine years plumbing inspector in this city. The new company has opened office, showroom and shop at 8921 West Pico boulevard and will conduct a plumbing and heating business.

Los Angeles, Calif.—G. B. Stephen has opened a plumbing and heating contracting business on his own account at 3716 South Figueroa street in this city. Mr. Stephen was connected with the Thomas Haverty Co. the last five years; for five years before that he was a city plumbing inspector in Los Angeles and for a time before that he owned and operated the Manual Arts Hardware and Plumbing Co. in this city.

WHAT WOMEN ARE DOING

BY DOROTHY EDWARDS

Bronx Auxiliary Holds Successful Outing

The Women' Auxiliary to the Master Plumbers' Association of the Bronx Branch, Inc,, held an outing to Welfare Camp on Tuesday August 2. Six cars brought the party to the camp. The outing was conducted by Mrs. Charles Kirchhof, who made arrangements for the luncheon that was served in the dining room of the camp.

In the party were: Mr. and Mrs. Charles Kirchhof, their daughter, Mrs. Richard Lyons, and Miss Alice Roth; Mr. and Mrs. S. George Arnone, Mrs. Theresa Grant and Mrs. Fred J. Riehm; Mr. and Mrs. Henry Kroepke and their two daughters; Mr. and Mrs. Louis Guerr, and their guests Mrs. E. P. Goetz of Brooklyn, and Mrs. J. H. Alexander of Atlantic Beach; Mr. and Mrs. Fred Schmalstich, Mrs. Steve Tulley and Mrs. Alex Beckerman; Mr. and Mrs. Joseph F. Egan, Mr. and Mrs. William Kroepke and their niece, making a total of twenty-five.

The party arrived at the camp at 1 p. m. and found the dining room was all set. After the luncheon the party went on a hike through the fifty-seven acre camp down to the lake, and it seemed to those that went that they covered the whole of the fifty-seven acres, but nevertheless every foot of the way was enjoyed. On arriving back at the camp proper, the swings were used by many.

A cheer was given Mrs. Kirchhof for the splendid way in which the party was conducted, and she was congratulated by all on the success of the outing.

A purse was presented to Mr. and Mrs. Kennedy in behalf of those present for the benefit of the camp and they were most grateful to all.

Toward evening the party again entered the dining room and finished what was left of the luncheon and then watched the sun set after one of the finest days ever spent by anyone.

North Shore Women's Auxiliary Closes Season

Mrs. C. D. McArthur entertained the Women's Auxiliary to the North Shore Plumbing Contractors' Association of Chicago at her home recently. Dessert and coffee were served. At this business meeting, it was decided to dispense with the meetings until fall.

Later cards were enjoyed with honors going to Mrs. Steffens, Mrs. Killian and Mrs. Butow.

Minneapolis Auxiliary Spends Day at Lake Minnetonka

The Minneapolis Auxiliary spent a very pleasant day recently at the summer home of Mrs. A. Lacher on Lake Minnetonka. The weather was ideal for a day out of doors, and a large number of the members took advantage of it. Long tables had been placed on the lawn decorated with huge bouquets of pink peonies. So among the beautiful flowers, birds and trees, a delicious luncheon was served.

The regular business meeting followed. The members were saddened by the death of Mrs. L. O. Klopfer, a past president of the auxiliary.

It was decided to have an excursion trip down the Mississippi River some time in August. Mrs. M. Jenson was named chairman and Mrs. B. Miars is to assist her. Not only the auxiliary members and their husbands are to be invited but all members of the Master Plumbers' Association and their families. It is to be an all day affair and should be very enjoyable.

After the meeting some of the ladies played cards while others went in bathing. Coffee, cake and cookies were served and everyone went home feeling happy to have spent such a delightful day together.

A Message from Mrs. E. D. Hornbrook

To the Editor:

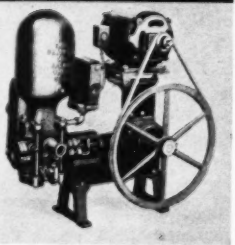
Taps: "Do not go My Love"

The quality of the resolution by the master plumbers of the District of Columbia transcends anything I have known. It was selfless, a beautiful tribute to my distinguished husband, whom they "honored while in the flesh." Mr. Sheehan's resume of Mr. Hornbrook's life has my loving approval. To his association, on this the first anniversary of his death, I extend my utmost esteem —assuring you of my love and devotion and asking you to ever remember me as your friend in everything that per-

Tablet presented to the National Association of Master Plumbers by the Women's Auxiliary at the recent Golden Anniversary Convention in New York City

Make PROFITS on Remodeling
THE KAINER
PRESSURE GOVERNOR
Accurate
Simple
Safe
Automatic Control for Hot Water Heating Systems

Write today for prices and Bulletin 32-B
A.S.M.E. Approved
KAINER & COMPANY CHICAGO
761-771 MATHER STREET

DEMING "MARVEL"
SHALLOW WELL DIRECT WATER SYSTEM
COMPARE THESE FEATURES
265 Gallons Per Hour (low cost per gallon)—Ball Bearings on Connecting Rod—Timken Roller Bearings on Crankshaft—Stainless Steel Piston Rod—Patented Splash Shield—Sectional Construction.

THE DEMING COMPANY
Established 1880 Salem, Ohio

4"x5" Oval Float
NO-SOL COPPER FLOATS
No-Sol Floats incorporate all features necessary to the satisfactory performance of a tank float.
Each float is individually tested and guaranteed.
INCORPORATED 1907
The AYLING & REICHERT CO.
3047 N. Erie St. Toledo, Ohio

5" Round Float

Sell Customer Satisfaction ... and profit is assured
You can safely recommend an OHIO... There's a model to fit every job.
Write for dealer proposition.
OHIO
Automatic
WATER HEATER
Manufactured by THE OHIO HEATER CO., Columbus, Ohio

tains to the National Association of Master Plumbers and their Women's Auxiliary.

Now the Warrior's task is o'er;
Now the battle day is past;
Now upon the farther shore
Lands the Voyager at last.

(Signed) Mrs. Edwin D. Hornbrook.

Minneapolis Auxiliary at the Demonstration Home

The Minneapolis Women's Auxiliary recently met at the Alice Ames Winter Demonstration Home with Mesdames Arnold Bing, Royal Berg, Walter Dahlstrom, A. G. Nelson and Otto Nelson acting as hostesses. At one o'clock a lovely luncheon was served followed by the regular business session. The remainder of the afternoon was spent playing cards.

Ogden Auxiliary Gives House Warming and Surprise Party

The first meeting of the month of July for the Ogden, Utah, Ladies' Auxiliary was to have been a get-together party for members and their husbands. However, at the last minute it resulted in a house warming and surprise party for Mr. and Mrs. Bishop. Mrs. Bishop is president of the Ogden auxiliary.

The second meeting was held at the attractive home of Mrs. Milton Bachman. The quilt, which the ladies have been working on, is nearly ready. After the business meeting, bunco was played and refreshments served. Only one meeting a month will be held during the hot weather.

Germantown Auxiliary Entertains With Banquet and Dance

The Ladies Auxiliary to the Master Plumbers' Association of Germantown, Pa., recently gave a surprise banquet and dance in honor of the men in the association, at the Spring House in Flourtown, Pa.

Mrs. E. Rich presided at the banquet and called on some of the men for short talks. Some of their experiences proved very amusing. After the banquet, dancing was in order and all enjoyed a most pleasant evening.

Milwaukee Auxiliary Gives Successful Picnic

Men, women and children, guests of the Ladies' Auxiliary to the Milwaukee Master Plumbers' Association, enjoyed the picnic arranged for their benefit at South Shore Park, Milwaukee, Wis., on July 21. The picnic activities included baseball and contests for the men, cards for the ladies, and games and candy gifts for the children. Mrs. O. H. Dittmer is secretary of the organization.

Indianapolis Auxiliary Enjoys Novel Luncheon Party

The regular monthly meeting of the Indianapolis Women's Auxiliary was held at the summer home of Mrs. Richard Bardy at Fall Creek Highlands, July 14th. A delightful luncheon, consisting of a covered dish which each member brought, was enjoyed. A short business session followed, and it was decided that an evening party be held in the near future at Mr. Bardy's home to entertain the husbands.

Bridge and bunco were played after the meeting, the children enjoying the afternoon swimming. Mrs. F. E. Trosky will entertain the members at her summer home at River Park at the August meeting.

PIPE LINES CONNECTED BY L·Y·T

ADVICE THAT CAME TOO LATE

"Give up drink, my good man, and you will live to be over eighty."

"It's too late, miss."

"It's never too late."

"Yes, it is. I'm over eighty-four now."

—LAUGHING GAS.

Clara: "You may not believe it, but I said 'No' to seven different men during the summer."

Maude: "Oh, I don't doubt it. What were they selling?"

"It was terrible, Mrs. Murphy. There were seventeen Swedes and an Irishman killed in the wreck."

"Indade! The poor man!"

They had picked the jury for an important trial. One man admitted that he was already convinced of the prisoner's guilt.

"Why, just one look at that guy's face," he said pointing, "would convince anyone that he is a crook."

"Oh, dear, dear, dear," cried the Judge, "that isn't the prisoner; that's the District Attorney!"

—LEIGHTON'S GLOOM CHASER.

Johnson, an auctioneer, convinced of the selfish life he had been leading, turned evangelist, and proved a success owing to his ready flow of vigorous language.

One day, however, carried away by his subject, he pleaded:

"The great opportunity waits for you today. If you let it slip by you may never have the chance again. Take it while you can—the opportunity may never come again—what am I bid?"

—THE KABLEGRAM.

Customer (watching butcher cut off a steak)—Hey! you're giving me a big piece of bone.

Butcher—No, I'm not. You're paying for it.

COURTEOUS TO THE END

"Is there anything you would like to do before I press the button?" asked the warden at Sing Sing to the murderer in the electric chair.

"Yes," said the latter, "I would like to get up and give a lady my seat."

NEW THRILL

He placed an arm around her waist,
And on her lips a kiss,
Then sighed: "It's many a draught I've had,
But not from a mug like this!"

—THE MUELLER RECORD.

A SAD PLIGHT

"I received a letter from a chap who said he'd shoot me if I didn't keep away from his wife, and I am scared to death."

"Then why don't you keep away from his wife?"

"The fellow didn't sign his name!"

—HIGH PRESSURE.

DIPLOMAT EXTRAORDINARY

Customer: "To what do you owe your extraordinary success as a house-to-house salesman?"

Salesman: "To the first five words I utter when a woman opens the door: 'Miss, is your mother in?' "

ONE-WAY SERVICE

Telephone Operator: "It costs 75 cents to talk to Bloomfield."

Scotchman: "Can't you make a special rate for just listening? I want to call my wife."

—O-B BULLETIN.

It's said that man is the only animal that can be skinned more than once. L Y T.

Marsh System Units

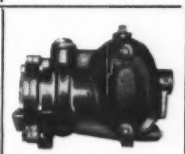
A.S.M.E. Gauge

Packless Radiator Valve

Radiator Trap

No. 12 Drip Trap

No. 5 Vent


No. 14 Heavy Duty Trap

No. 150 Radiator Valve

Air and Vacuum Valve

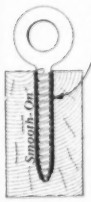
No. 5 Vent

JAS. P. MARSH CORPORATION
Home Office: 2079 Southport Ave., Chicago. Ill.
Sales offices in principal cities
IN CANADA: Jas. Morrison Brass Mfg. Co., Ltd., Toronto

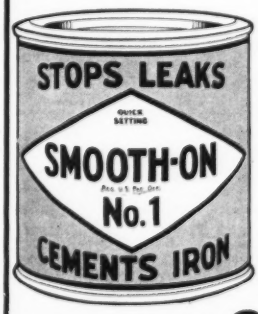
This withstands more pull than this

STRIPPED THREADS

—reset them with Smooth-On No. 1 The new hold will be as tight as or tighter than the original



SMOOTH-ON No. 1 expands in metallizing, and holds against high tension, torsion, compression, and is therefore ideal for resetting stripped wood screws, machine screws, bolts, studs, nuts, for anchoring foundation or holding bolts in concrete floors or walls, for anchoring pipe posts in concrete, for sealing leaks at threads, gaskets, seams, cracks and corroded and porous metal.



For proper procedure on hundreds of inexpensive and intensely practical repairs, consult the Smooth-On Handbook.

Get Smooth-On No. 1 in 1 or 5-lb. can or 25 or 100-lb. keg at your supply house or from us.

SMOOTH-ON MFG. CO., Dept. 12,
570 Communipaw Ave.
Jersey City, N. J.

Do it with **SMOOTH-ON**

ACHESON BRASS FITTINGS

TRADE MARK
M
INSIDE EACH FITTING
The Best Brass Fittings that Experience, Modern Machinery, Rigid Inspections and Conscientious Effort Can Produce
Acheson Mfg Co.
THE DEPENDABLE LINE
For The Jobber To Handle
And The Plumber To Use

Make Business Better . . . . . .

By offering greater value at a competitive price.

Challenge Nipples do just that. If all lines were equally effective business would hum.

FRICK - REID SUPPLY CORPORATION
Nipple Division
117 Sandusky St., N. S. Pittsburgh, Pa.

A Complete Home Water System

$59.50 LIST PRICE
F. O. B. Factory

A complete, electric, fully automatic HOME WATER SYSTEM at the lowest price in history for a genuine Fairbanks-Morse Product. Other sizes and types for any water supply, engine or electric driven at correspondingly low prices.

FREE BOOK All about Home Water Systems—how to choose the type to best meet your needs. Full information on how RUNNING WATER can be installed in your home at lowest cost. Sent free. Write

FAIRBANKS-MORSE & CO., Dept. I8
900 S. Wabash Ave., Chicago

FAIRBANKS-MORSE
HOME LIGHT AND WATER SYSTEMS

The Electric Janitor

FOR THE
LOW PRICED FIELD

$49.00 PLUS INSTALLATION

PRODUCT OF
TIME-O-STAT CONTROLS
DIVISION MINNEAPOLIS-HONEYWELL REGULATOR CO.
Minneapolis, Minnesota . . . Elkhart and Wabash, Ind.

SENTENCES THAT SELL

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

It is wise to prepare for the future by studying both the past and the present.

* * *

Beware of the man who finds it necessary to boast of his honesty.

* * *

Learning does not necessarily imply wisdom.

* * *

Men are like rivers; the deeper they are the less noise they make.

* * *

There's no show for the small boy who can't get into the circus.

* * *

It takes at least sixteen summers to make one summer girl.

* * *

Talk isn't cheap when you hire a lawyer to do it for you.

* * *

No man with a poor memory has any business to be a liar.

* * *

It is easy to find fault, but it is hard to tell what to do with it.

* * *

Idleness travels so slowly that it is soon overtaken by poverty.

* * *

A man could learn a great many things if he didn't think he already knew them.

* * *

The silent watches of the night are those we forget to wind.

* * *

Hope for the best, prepare for the worst and take what comes.

* * *

Now is the watchword of the wise.

* * *

One good mother is worth a hundred schoolmasters.

* * *

Experience teaches people a lot of things they would rather not know.

* * *

Good temper is like the sun; it sheds brightness over everything.

* * *

Friends are almost as scarce as umbrellas when they are needed.

* * *

A man may run into debt, but he seldom comes out of it faster than a walk.

* * *

There is nothing wrong with the mind of a man who minds his own business.

* * *

A cunning minority often beats an over-confident majority.

* * *

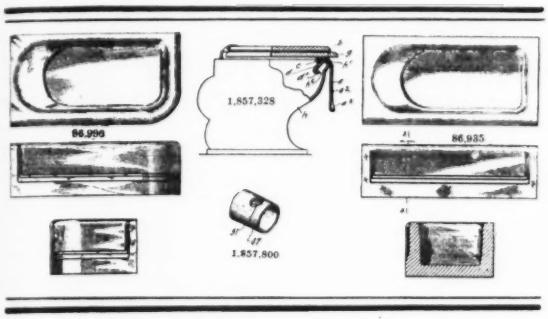
Bacon says that "reading maketh a full man." So does eating bacon.

NEW IDEAS FROM PATENT OFFICE

Plumbing Department

86,936. Ornamental Design for a Bathtub. George Sakier, New York, N. Y., assignor to Standard Sanitary Manufacturing Company, Pittsburgh, Pa., a Corporation of New Jersey.

1,857,328. Toilet Bowl. Frederick Piper, Portland, Oreg.

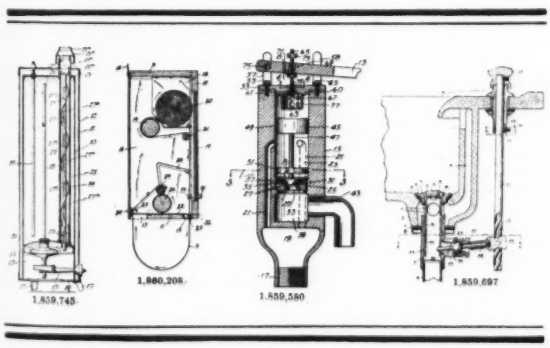


1,857,800. Water Closet. William J. Woolley, Chicago, Ill.

86,935. Ornamental Design for a Bathtub. George Sakier, New York, N. Y., assignor to Standard Sanitary Manufacturing Company, Pittsburgh, Pa., a Corporation of New Jersey.

1,859,745. Flue Structure for Heating Apparatus. James P. Morley, Michigan City, Ind., assignor to Bastian-Morley Company, La Porte, Ind., a Corporation of Indiana.

1,860,208. Cabinet for Towels. Samuel A. Schwartz, St. Paul, Minn.



1,859,697. Bath, Basin and Receptacle Fitting. Albert H. Fleck, Cleveland, Ohio, assignor of two-fifths to Michael B. Koelliker, Cleveland, Ohio.

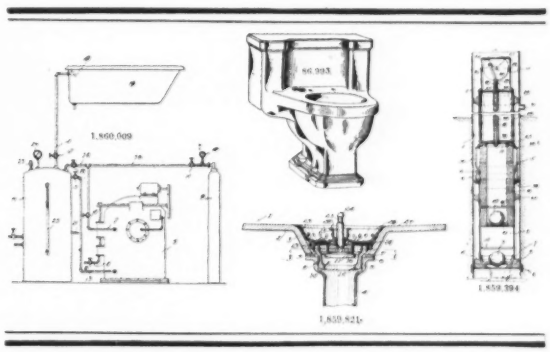
1,860,009. Bath Apparatus. Joseph S. Belt, Amarillo, Tex.

86,995. Unitary Water Closet Bowl and Tank. George Brain, Tiffin, Ohio, assignor to Standard Sanitary Manufacturing Company, Pittsburgh, Pa., a Corporation of New Jersey.

1,859,394. Hydraulic Ram or Pump. James W. Holladay, Plainview, Tex.

1,859,580. Valve. Vannevar Bush, Belmont, Mass., assignor to Spencer Thermostat Company, Cambridge, Mass., a Corporation of Massachusetts.

1,859,821. Waste Pipe Fitting. David H. Ebinger, Columbus, Ohio, assignor to The D. A. Ebinger Sanitary Mfg. Company, Columbus, Ohio, a Corporation of Ohio.



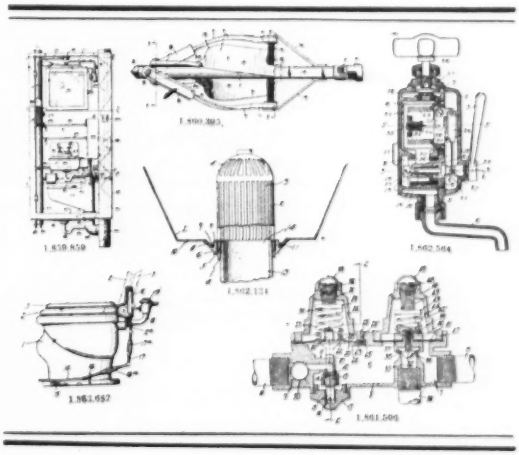
1,859,859. In-a-Door Bathroom. David F. Zook, Evanston, Ill.

1,860,395. Sewer Pipe Cleaning Tool. Ira W. Pence, Cleveland, Ohio, assignor to Lynn W. Merriam, Parma, Ohio.

1,862,564. Thermostatic Mixing Valve. Harry A. Bern, Chicago, Ill.

1,862,134. Gutter or Roof Drain. Edward W. N. Boosey, Detroit, Mich.

1,863,682. Toilet Bowl. Samuel Alberts, Los Angeles, Calif.



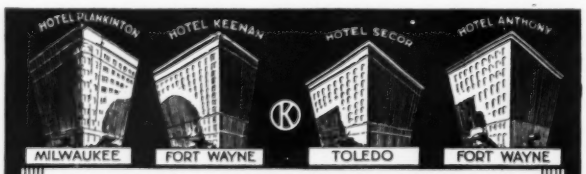
1,861,506. Valve for Hot Water Systems. Ira I. Nelson, Boston, Mass.

1,860,781. Removing Silica from Water. Otto Liebknecht, Berlin-Grunewald, Germany, assignor to The Permutit Company, New York, N. Y., a Corporation of Delaware. In the removal of silica from water containing the same the process which comprises percolating said water through a previous bed of non-siliceous hardened gel iron oxide.

ONE of the few really famous hotels in America . . . providing faultless service for the comfort and happiness of those who appreciate the refinements of gracious living . . . a traditional exclusiveness in the very center of Philadelphia's business and social life.

Rates consistent with present times

BELLEVUE STRATFORD
PHILADELPHIA
CLAUDE H. BENNETT, *General Manager*



STOP AT KEENAN HOTELS

In all things a Keenan Hotel sincerely tries to so well please its guests that they will be glad they came, sorry to leave, and eager to return. Accommodations and appointments are exceptional Rates and prices are reasonable.

James A Keenan PRESIDENT

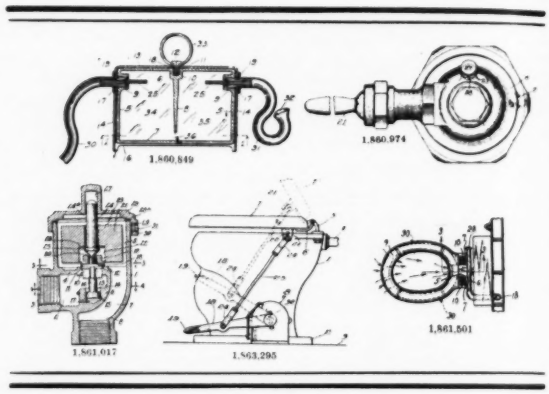
You wouldn't think of missing your daily paper « « «

yet it does not begin to help you as your business paper does . . so why not spend a minute to send in your subscription. You will soon realize the tremendous help you have been doing without.

DOMESTIC ENGINEERING
1900 PRAIRIE AVENUE • • CHICAGO

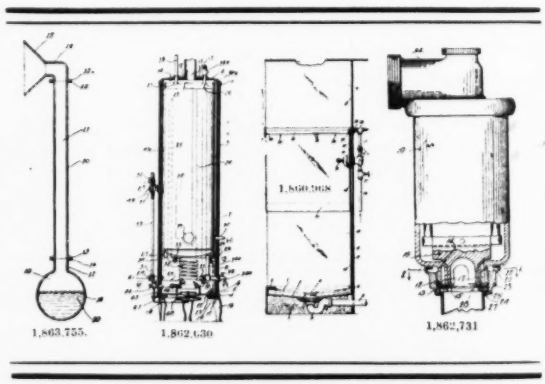
1,860,849. Portable Water Softener. **Harold E. Burch**, Oakland, Calif.

1,860,974. Flush Valve. **Roy H. Zinkil**, Oak Park, Ill., assignor to Crane Co., Chicago, Ill., a Corporation of Illinois.



1,861,017. Antisiphon Valve. **Harry E. Lake**, New York, N. Y., assignor to Preferred Utilities Manufacturing Corporation, New York, N. Y., a Corporation of Delaware.

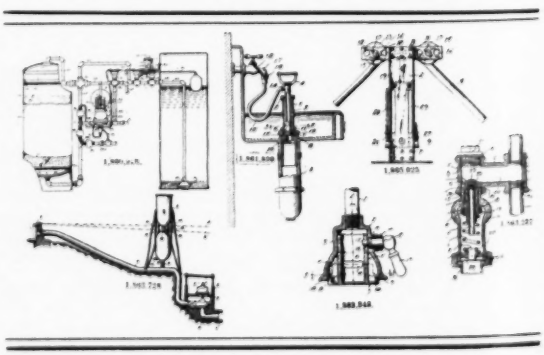
1,863,295. Toilet Seat Appliance. **Joseph J. Bukovitz**, Chicago, Ill.



1,861,501. Foul Air Exhauster. **Jesse P. Lowther**, Spokane, Wash.

1,863,755. Pipe Cleaning Method. **Herbert Lodde**, New York, N. Y.

1,862,630. Domestic Hot Water Heater. **Clarence H.**



Morrow, Cleveland, Ohio, assignor to The Hotstream Heater Company, Cleveland, Ohio, a Corporation of Ohio.

1,860,968. Shower Bath Construction. Michael J. Tracy, St. Louis County, Mo.

1,862,731. Siphon-Break for Flush Valves, Etc. Harold Wesson, Springfield, Mass., assignor to Smith and Wesson, Inc., Springfield, Mass., a Corporation of Massachusetts.

1,860,926. Water Softening Apparatus. Charles P. Eisenhauer, Dayton, Ohio, assignor to The Duro Company, Dayton, Ohio, a Corporation of Ohio.

1,861,899. Cleaner. W. B. Beach, Jr., Wichita Falls, Tex., assignor to L. W. Alexander, Wichita Falls, Tex.

1,865,025. Hydraulic Pipe Bending Machine. Gustave Lidseen and John E. Flanagan, Chicago, Ill.

1,863,728. Surge Tank for Water Pipe Lines. Harry T. Porter, Riverside, Ill., assignor to S. Morgan Smith Company, York, Pa., a Corporation of Pennsylvania.

1,863,548. Shower Bath Head. Leon Bloch, Cleveland, Ohio, assignor, by mesne assignments, to Speakman Company, Wilmington, Del., a Corporation of Delaware.

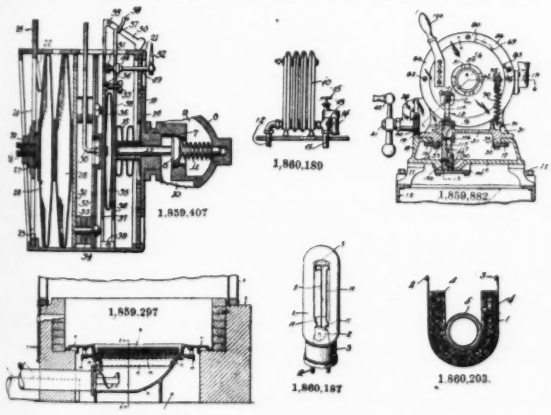
1,863,227. Relief Valve Fitting. Joseph A. Maynard, Boston, Mass.

Heating Department

1,859,407. Temperature Regulation. Arthur J. Otto, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis., a Corporation of Wisconsin.

1,859,882. Pipe Threading Machine. Ira W. Nonneman, Warren, Ohio, assignor to The Borden Company, Warren, Ohio, a Corporation of Ohio.

1,860,189. Thermostatic Control Valve. James J. Lawler, Mount Vernon, N. Y.



1,859,297. Stoker. Walter J. Haag, Dayton, Ohio, assignor to The Brownell Company, Dayton, Ohio, a Corporation of Ohio.

1,860,187. Temperature Controlling and Measuring Apparatus. Lewis R. Koller, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. tion, a Corporation of Michigan.

1,860,203. Pipe Covering. Lewis M. Rishel, Detroit, Mich.

1,862,002. Pipe Wrench. Alphonse O. Brungardt, Brookline, Mass.

1,860,346. Welded Pipe Joint and Method of Making the Same. James L. Anderson, Tenafly, N. J., assignor to

Coming to Chicago?

Chicago's most interesting hotel offers you unequalled luxury at low rates. In the heart of Chicago's Rialto with its brilliant night life close to stores, offices and railroad stations.

UNEQUALLED CONVENIENT LOCATION and YOU CAN DRIVE YOUR CAR RIGHT INTO HOTEL SHERMAN GARAGE

1700 ROOMS 1700 BATHS FROM $3.

HOTEL SHERMAN

HOME OF THE COLLEGE INN

CHICAGO'S BRIGHTEST SPOT

THE FINEST..... at ordinary cost

Detroit-leland HOTEL

Luxurious, soft, inviting beds~ Charming room arrangement~ Unobtrusive service~ Compelling splendor in dining room and coffee shop with electrically cooled and purified air~ An address to mention with pride.

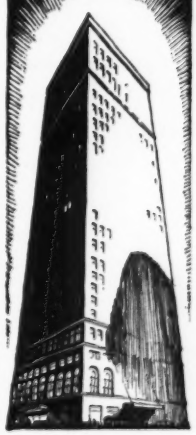
800 ROOMS

all outside and all with private bath~at no more than the cost of an ordinary hotel.

Single $2.50 and up

Double $3.50 and up

BAKER OPERATED



IN THE HEART OF DETROIT

CASS AND BAGLEY AVENUES

THE "MODERN" RANGE BOILER

30 and 40 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.

INCREASE YOUR PROFITS

There's a good margin for you
And satisfied customers too!

Sell Dole Air & Vacuum Valves

Write for full information.

How it looks inside Dole 2-B Vacuum Valves

THE DOLE VALVE COMPANY 1913 Carroll Ave., Chicago

The Breakers

ON THE BOARDWALK

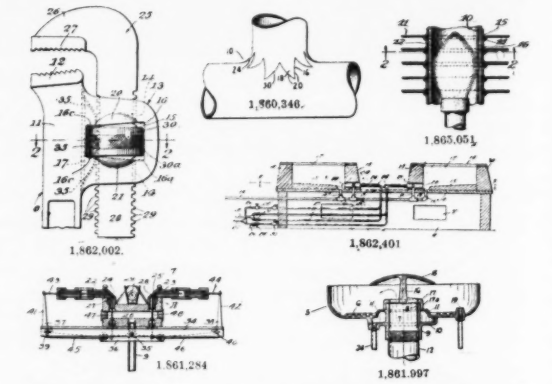
Atlantic City, N. J.

Features New Low Rates for Boardwalk Hotel Accommodations

PER DAY $5 PER PERSON

With Meals and Private Bath
Two in a Room

HOT AND COLD SEA WATER
EXCELLENT CUISINE ∴ GARAGE FACILITIES



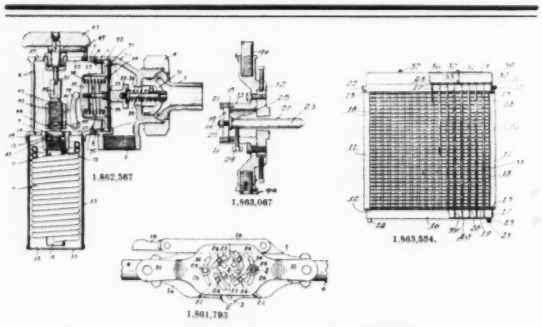
Air Reduction Company, Incorporated, New York, N. Y.

1,865,051. Radiator. Reuben N. Trane, La Crosse, Wis.

1,862,401. Oil Burner. Ernest S. Hoyt, Pepin, Wis.

1,861,284. Oil Burner. John L. Ricketts and Charles F. Dengler, Philadelphia, Pa.

1,861,997. Oil Burner. August Behrsin, Huntington Park, Calif.

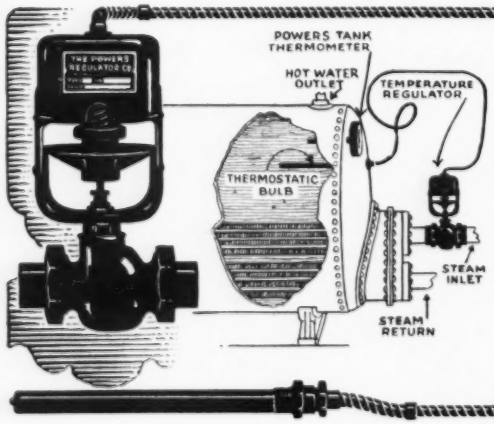


1,862,567. Thermostatic Control for Valves. V. Fina, assignor to Direct Control Valve Company, Chicago.

1,863,067. Pipe Threading Device. C. B. Perry, San Jose, Calif.

1,863,554. Heat Radiator. Harry C. Alberts, Chicago.

1,861,793. Diestock. Gideon Garfield Hassler, Stowe Township, Allegheny County, Pa.



$135. Invested in Powers Control Saves $1,145. a Year

Metered steam records of Aldis & Co., who own and operate many buildings in Chicago, showed a reduction of 154,000 pounds of steam a month with Powers Temperature Control on hot water heaters in their Champlain Building.

Besides preventing steam wasted by OVER-heated water, complaints about hot water were practically eliminated.

As Powers Tank Regulators usually give 10 to 15 years of Dependable Control, the profit on a $100 investment is often more than $10,000.

Phone or write our nearest office for prices or engineering data

THE POWERS REGULATOR CO. Chicago: 2716 Greenview Ave. New York: 231 East 46th St.

Offices in 43 Cities — See your telephone directory

CLASSIFIED ADVERTISING

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

Situations Open

PLUMBING BRASS SALESMAN OF proven ability, selling plumbers and jobbers. Position involves hiring and training salesmen and keeping them enthusiastic by periodically assisting them and demonstrating the salability of our distinctive brass goods, selling at attractive prices. Expenses and nominal salary to start. Unusual opportunity. Give full particulars. Address Key 774, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED—SALES AGENTS TO HANdle our line of copper floats and rubber tank balls in the St. Louis and Kentucky territories on a commission basis. Address Key 769, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALESMEN — LEADING MANUFACturer, with line of cast and steel warm air furnaces, steam and hot water boilers, and other heating supplies, has territory open in Missouri, Iowa, Ohio and Illinois. Address Key 767, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

Situations Wanted

PLUMBER-STEAMFITTER, AGE 37, married, 15 years' experience, good lead worker, can read plans, layout and estimate; small Missouri town preferred. Address R. M. Coleman, Dillon, Mo.

NATURAL HEATING AND VENtilating engineer, 25 years' experience, can take charge of designing, estimating and installation, familiar with air velocities, fan capacities, anemometer, manometer and psychrometric work. Age 43. Address Key 753, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

PRACTICAL PLUMBER WANTS steady position. First class mechanic. Experience handling work and estimating. Would consider interest in business. Best references; will go anywhere. Address Key 754, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

MANAGER, CAPABLE OF TAKING full charge of plumbing and heating supply house, now employed, desires change. Address Key 762, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

BOOKKEEPER, STENOGRAPHER, etc. Young man, 27, eight years' experience in combination plumbing, heating and ventilating contractor's office, desires position. Capable of taking full charge of large or small office. Best of references. Will locate anywhere. Address Key 756, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

Lines to Handle

WANTED BY MANUFACTURER OF high grade plumbing specialty adapted to remodeling, representatives on liberal commission basis in following territories: Ohio, Western Pennsylvania, Indiana, Iowa, Michigan, Minnesota, Kentucky, Tennessee, Georgia, Virginia, South Carolina, North Carolina, Louisiana, Oklahoma, Texas, Missouri, Nebraska. Men acquainted with plumbing supply trade and architects in territories are desired. No objection to handling other line. Product nationally known in industry. Address Key 752, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Lines Wanted

MANUFACTURERS' REPRESENTAtive, New York Metropolitan, man calling on plumbing and hardware supply houses, industrials would like to make new connections or take on additional lines. Address Key 771, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

MANUFACTURERS' REPRESENTAtive calling on the jobbers of plumbing and heating supplies in metropolitan New York district wishes a few high grade lines. Well acquainted with the trade. Address Key 770, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

DO YOU WANT REPRESENTATION in Chicago and vicinity? Twenty-five years' experience in plumbing, heating and mill supply lines. Address Key 773, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

LINES WANTED—MANUFACTURERS' agent, covering jobbers in the Philadelphia territory, will take on additional lines. 15 years' experience. Address Key 751, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

MANUFACTURERS' REPESENTATIVE covering plumbing trade on Delmarvia Peninsula desires additional lines. Address P. O. Box 751, Wilmington, Delaware.

Representatives Wanted

DISTRICT SALES REPRESENTATIVE. Several desirable territories now open to represent well-known line of Electric Pumps and Water Systems. Only high type salesmen need apply. References required. Write at once to Key 772, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Use this page to get what you want

If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

The cost of insertion is only eight cents a word and may mean many dollars to you.

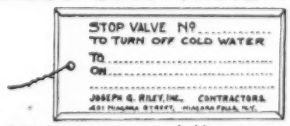
SALES REPRESENTATIVES
BRANCH MANAGERS
SALESMEN

who are thoroughly experienced in the sale of steam and hot water heating equipment, who have outstanding sales records and who are interested at this time in a lucrative sales opportunity such as does not usually exist, should write for further information. Give full particulars concerning experience, past connections and sales. Present members of organization are aware of this ad and all inquiries will be treated confidentially. Address P. O. Box 1222, Pittsburgh, Pa.

MANUFACTURERS' REPRESENTAtives wanted by manufacturer of line of tubular and cast brass goods for states of Virginia, Georgia, Florida, Alabama, Mississippi, and the Carolinas. Address Key 768, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Miscellaneous

HADCO STOP VALVE TAGS



Printed with your name and address makes an everlasting advertisement. Send for samples and prices.
HADDON BIN LABEL CO. Haddon Heights, N. J.

Audel's Plumbers' Guide

The standard educator; teaches the theory and practice of plumbing, heating, steamfitting, gasfitting and sheet metal work. Answers your questions. Explains the new short cuts, modern methods and inside trade information. Easy to understand. A complete reference and home study course. Fully illustrated, authentic, up-to-date, with plumbers code. Four volumes, pocket size; price $6 complete, payable $1 a month. Write today for FREE Plumbers Folder. THEO. AUDEL & CO., 65 W. 23rd St., New York.

PLUMBERS' BIN LABELS

$1\frac{1}{2} \times \frac{3}{4}$
RED. ELLS

Send for samples and prices of card holders, bin labels and stop valve tags, and free booklets: "How to Lay Out the Plumbing Shop." Haddon Bin Label Co., Haddon Heights, N. J.

WE MAKE A SPECIALTY OF JOB Tickets, Time Sheets, Letter Heads, Envelopes, etc., for Plumbing Contractors. Prices include delivery to Eastern Points. Samples mailed. Address Louis Fink & Sons, School Building, Laurel Springs, New Jersey.

Index to Advertisers

August, 1932

Acheson Mfg. Co.....158
Air Reduction Sales Co.... 27
American Blower Corp.... 29
American Brass Co..... 10
American Radiator Co.....165
American Sanitary Mfg. Co. 89
Armstrong Bros. Tool Co..148
Ayling & Reichert Co.....156

Barber Gas Burner Co., The.....101
Barnes & Jones, Inc.....131
Bead Chain Mfg. Co.....149
Beaton & Cadwell Mfg. Co.132
Benson Co., Inc., Alex R...150
Blake Specialty Co.....134
Burnham Boiler Corp..... .....Back Cover
Butler Mfg. Co.....107
Byers Co., A. M..... 5

Capitol Brass Division of Bohn Aluminum & Brass Corp. 20
Chase Brass & Copper Co. Inc. 21, 22, 23, 24
Cleveland Brass Mfg. Co..152
Crane Co. 78

Dahlquist Mfg. Co.....132
Dart Mfg. Co., E. M.....152
Decatur Pump Co.....151
Deming Co., The.....156
Dole Valve Co.....162
Duriron Co., Inc., The.....130

Electrol, Inc. 109

Fairbanks, Morse & Co....158
Fretz-Moon Tube Co., Inc.153
Frick-Reid Supply Corp..158

General Electric Co.....118
Gerstein & Cooper Co.....154
Grabler Mfg. Co..... 19

Hayes Mfg. Co.....162
Hays Mfg. Co.....129
Hindley Mfg. Co.....143
Hoffman Specialty Co..... .....14 and 15
Hotel Bellevue Stratford...160
Hotel Breakers 162
Hotel Detroit Leland.....161
Hotel Sherman 161

Illinois Malleable Iron Co..151
Imperial Brass Mfg. Co....150
International Nickel Co... 25

Jarecki Mfg. Co.....128
Johns-Manville.....6 and 7
Jones & Laughlin Steel Corp. 8

Kainer & Co. 156
Keasbey & Mattison Co....140
Keenan Hotels 160
Kennedy Valve Mfg. Co.... 17
Kohler Company 138
Koven & Bro., Inc., L. O...141

Lavelle Rubber Co.....146
Leland Electric Co.....108
Leonard-Rooke Co. 140

Marsh Corp., Jas. P.....157
McDonnell & Miller.....104
Malleable Iron Fittings Co. 77
Miller Co., Chas. A..... 70
Minneapolis Honeywell Regulator Co. 158
Motor Wheel Corp.....117
Mueller Co. 73
Myers & Bro. Co., F. E....147

Nash Engineering Co..... 33
National Pipe Bending Co..144
National Radiator Corp.... 31
National Regulator Co....116
National Tube Co..... 85

Oakland Foundry Co., The.126
Ohio Brass Co.....123
Ohio Heater Co., The.....156

Patterson-Kelley Co., The.150
Peck Bros. & Co., The..... 93
Penberthy Injector Co..... 69
Penna. Range Boiler Co...134
Perfex Corp. 90
Phoenix Brass Fittings Corp. 146
Pittsburgh-Des Moines Steel Co. 114
Powers Regulator Co.....162

Raymond Co., F. I.....113
Reading Iron Co..... .....Inside Back Cover
Red Jacket Mfg. Co.....143
Redlon, O. M.....144
Reichert Float & Mfg. Co.153
Revere Copper & Brass, Inc. 13
Robertshaw Thermostat Co. 115
Rome Radiator Co..... 12

Scovill Mfg. Co..... 18
Sherwood Brass Works.... 11
Silent Glow Oil Burner Corp. 96
Sloan Valve Co..... 86
Smooth-On Mfg. Co.....157
Spang, Chalfant & Co., Inc. 16
Speakman Co. ....Inside Front Cover
Spencer Heater Co.....102
Spencer Thermostat Co....112
Standard Sanitary Mfg. Co. 9

Taber Pump Co.....152
Teeple Co., L. R.....114
Thrush & Co., H. A..... 28
Toledo Pipe Threading Machine Co. 34
Trenton Potteries Co.....166
Trimont Mfg. Co.....150

Vogel Co., Jos. A..... 3

Warnock Mfg. Co.....152
Weil-McLain Co. 110
Weis Mfg. Co., Henry.....139
Westco Pump Corp.....124
Wise, Inc., J. B..... 74
Wolverine Brass Works...148
Worcester Brush & Scraper Co. 154

Youngstown Sheet & Tube Co. 26

STEP OUT OF THE RED...IN '32

HERE is the biggest modernization sales campaign of the year—the most comprehensive ever produced in the heating industry. If you are interested in profits—want a complete plan to get profits—willing to do intensive work to deserve profits... get details now of our "Out of the Red in '32" Campaign. Sign the coupon—mail it today!

AMERICAN RADIATOR COMPANY
40 West 40th Street, New York
Division of
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

STEP ON IT!
MAIL
this coupon

2

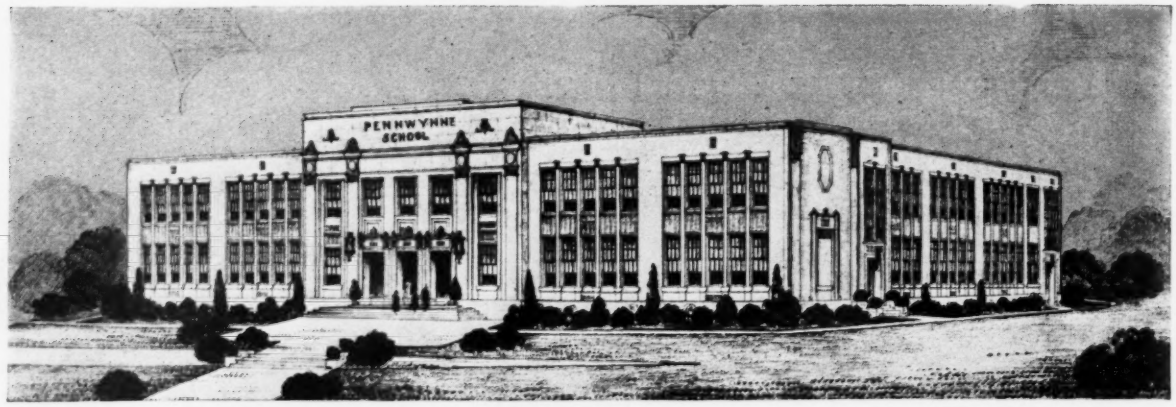
AMERICAN RADIATOR COMPANY
40 West 40th Street, New York, N. Y.

I'm interested in profits! Please let me have the details of your "Out of the Red in '32" Campaign.

NAME _____

ADDRESS _____

CITY _____



RALPH E. WHITE, Architect, Phila., Pa

Many architects choose
TE-PE-CO'S SPEEDWAY
for school installation

CLOGGING of the passageway in a water closet is a frequent source of trouble, caused by people attempting to dispose of articles that will not pass the contorted trapway of ordinary closets.

Te-pe-co Sanitary Engineers designed the Speedway to overcome this trouble. The entire trapway being larger than its opening in the bowl will obviously pass anything that enters it. For this reason, it is particularly adapted to schools, public comfort stations, industrial and commercial buildings.

It is made with back supply for connection to a concealed or seat action valve, in both the regular and juvenile height.

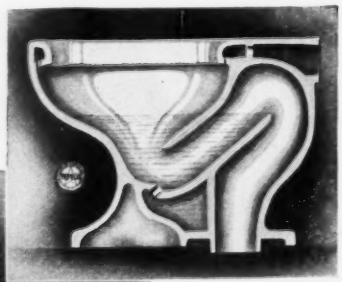


Plate 4521-T—Back Supply Speedway Equipped with Flush Valve. Other models shown in Catalogue.

Details of construction showing large water surface and unobstructed passageway.

OUR GUARANTEE . . . We make but one grade of ware—the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.

THE TRENTON POTTERIES COMPANY

TRENTON, NEW JERSEY, U. S. A.

National Showrooms:

New York City, 101 Park Avenue, Entrance on 41st St.
Philadelphia, Architects' Building, 17th & Sansom Sts.

Branch Offices: Boston, Chicago Export Office: 115 Broad Street, New York City

Some of the Recent Installations of the Speedway

AGRICULTURAL SCHOOL, DISTRICT NO. 1	Grosse Point, Mich.
KETCHIKAN HIGH SCHOOL	Ketchikan, Alaska
SAEGER-HOKENDAUQUA SCHOOL	Hokendauqua, Pa.
WILLIAMSON HOTEL	Williamson, W. Va.
ULHLEIN JOB	Milwaukee, Wis.
GRAND RIVERIA THEATRE	Detroit, Mich.
PROVIDENCE GAS SERVICE BLDG.	Providence, R. I.
WILSON THEATRE	Detroit, Mich.
NEW YORK HERALD-TRIBUNE BLDG.	New York City, N. Y.
ARCADE BLDG.	Asheville, N. C.
DETROIT OFFICE & NEWSPAPER BLDG.	Detroit, Mich.
SUNBURY CONVERTING WORKS	Belvidere, N. J.
RAYTHEON MFG. CO. FACTORY	Newton, Mass.
FLORENCE CRITTERTON HOME	Detroit, Mich.
PAROCHIAL SCHOOL	Yeadon, Pa.
NURSES' HOME, ST. JOHN'S HOSPITAL	St. Louis, Mo.
TEXAS & PACIFIC HOSPITAL	Marshall, Texas
ST. THOMAS HOSPITAL	Akron, Ohio
FRENCH BROAD HOSPITAL	Asheville, N. C.
CHILDREN'S WARD, TUBERCULOSIS HOSPITAL	Wallum Lake, R. I.
YANKEE STADIUM	New York City, N. Y.
PARK PAVILION	North Milwaukee, Wis.
BELCHER & LOOMIS WAREHOUSE	Providence, R. I.
FILBERT WHOLESALE BLDG.	Philadelphia, Pa.
CORONER'S COURT BLDG.	St. Louis, Mo.
J. L. HUDSON STORE	Detroit, Mich.
ST. JOSEPH'S SEMINARY	Cleveland, Ohio
CHEMISTRY BLDG., UNIVERSITY OF OHIO	Columbus, Ohio
JUPITER SCHOOL	Buncombe Co., N. C.
BOARDMAN SCHOOL	Boardman, Ohio
HIGH SCHOOL & JUNIOR COLLEGE	Asheville, N. C.
JUNIOR HIGH SCHOOL	Indianola, Ohio
McDONALD HIGH SCHOOL	McDonald Township, Ohio
LEESBURG SCHOOL	Leesburg, Fla.
WEAVERVILLE SCHOOL	Weaverville, N. C.
ONTARIO SCHOOL	Columbus, Ohio
DUKE POWER CO. BLDG.	Charlotte, N. C.
FOX FILM PRODUCTION PLANT	New York City, N. Y.
WEST VIRGINIA PULP PLANT	Mechanicsville, N. Y.

TE-PE-CO
ALL CLAY PLUMBING FIXTURES